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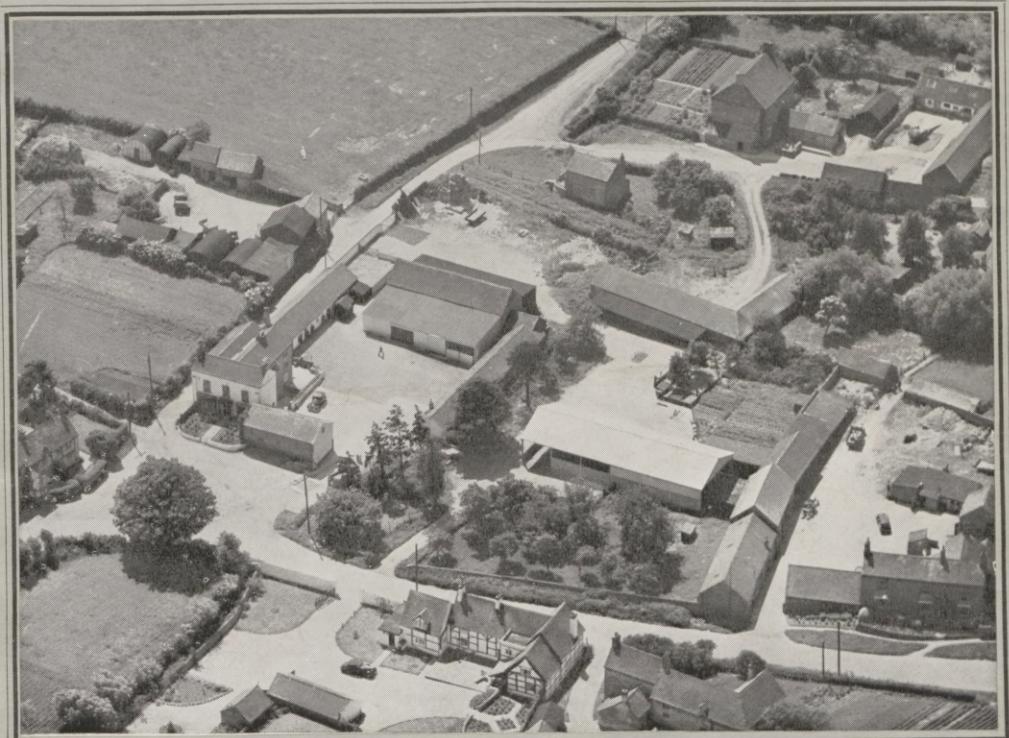
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THE PATTERN OF FARMING
IN THE
EAST MIDLANDS

BY

R. BENNETT JONES, M.Sc.

6s. 0d.

THE PATTERN OF FARMING IN THE EAST MIDLANDS

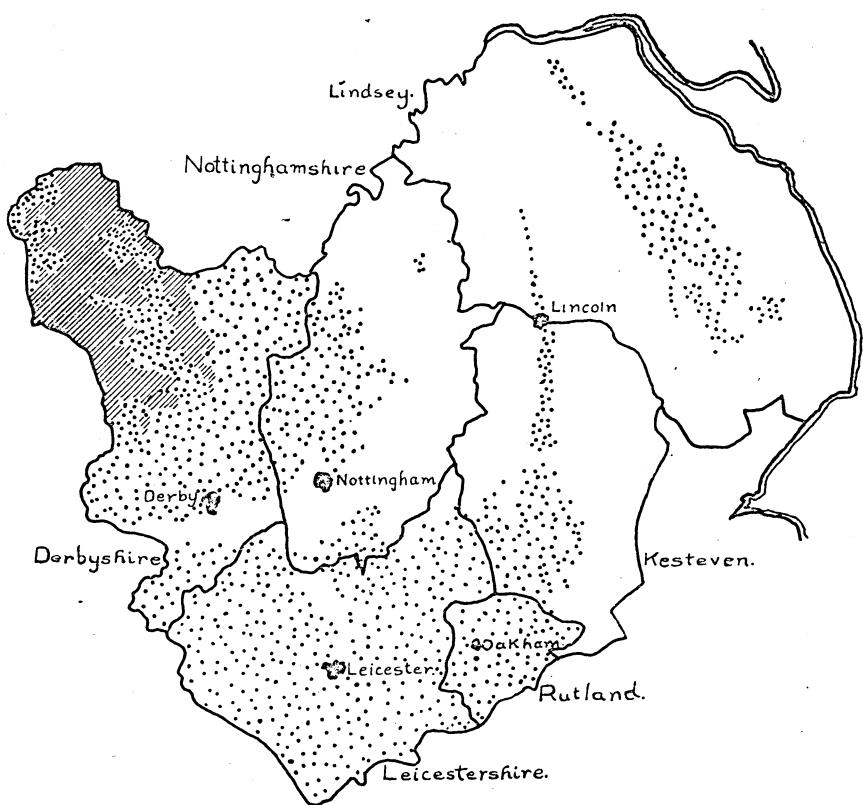
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1954.



HEIGHT ABOVE SEA LEVEL	
■	800' and over.
■	200' - 800'
□	0' - 200'

MAP SHOWING PHYSICAL FEATURES OF
EAST MIDLANDS PROVINCE.

ACKNOWLEDGMENTS.

The courtesy of the Ministry of Agriculture in permitting access to the June, 1947 Agricultural Returns is gratefully acknowledged.

The author is especially indebted to Mrs. P. P. Nicolson (née Richardson) for supervising and checking the clerical work and for the preparation of the various dot diagrams and maps. This entailed a vast amount of careful and painstaking work.

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The aerial views in centre inset were taken by Dr. J. K. St. Joseph, M.A., Ph.D. They are reproduced by kind permission of The University of Cambridge and The Air Ministry.

The illustration on the cover of this book is reproduced by permission of Aero Films Ltd., and represents the steading of a Dairy Farm on the Leicestershire-Derbyshire border.

Finally, the Author wishes to acknowledge the time and care which Mr. Geo. H. Green has devoted to preparing this work for printing and to checking the galley and page proofs.

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SUMMARY.

(1) Since Agricultural returns were first collected systematically efforts have been made to analyse and present them in ways which will add to their value. From counties and parishes the subdivision was extended to show separately figures for holdings of various sizes and for 'grazing' and 'corn' counties.

(2) From 1907 to 1911 the distinction was drawn between holdings farmed for pleasure and those farmed for profit.

(3) In 1924, holdings of over 20 acres, other than poultry and fruit and vegetable farms, were put into three groups—arable, pasture and mixed—and separate details of cropping and stocking given for each.

(4) A new approach to the problem was made in Buckinghamshire between 1935 and 1938 when farms were classified as full-time, part-time or spare-time after a study of the occupier's main occupation.

(5) The National Farm Survey of 1941 used the same basis of classification of occupiers by economic type. It also grouped farms according to Type of Farming Area as defined in 1939 by the Land Utilisation Survey in the preparation of its Types of Farming Map. There is evidence that in many instances farmers classified as part-time actually occupied full-time farms.

(6) In Scotland, farms have been classified by economic type without reference to the occupier's occupation. This classification was based on the data contained in the 1947 Agricultural Returns.

(7) This report describes a similar classification of holdings in the East Midlands Province of England and Wales. The procedure was as follows :—

- (A) Holdings were designated full-time, part-time or spare-time on the basis of the estimated labour requirements of their crops and stock.
- (B) Specialist holdings were segregated.
- (C) Holdings with less than 25 per cent of their crops and grass acreage devoted to sale crops were divided into
 - (i) Dairy farms.
 - (ii) Livestock farms.

- (D) From holdings with more than 25 per cent of their acreage of crops and grass devoted to sale crops the two following types were removed.
- (i) Cropping with Dairying.
 - (ii) Cropping with Pigs or Poultry.
- (E) The remaining farms were divided between those with :—
- (i) Over 50 per cent of acreage under crops for sale. (Predominantly Arable).
 - and (ii) 25-50 per cent of acreage under crops for sale. (Cropping with Livestock).
- (F) Those in (E) (i) were then divided into two groups :—
- (i) less than 20 livestock units per 100 acres. (Predominantly Arable).
 - and (ii) more than 20 livestock units per 100 acres. (Predominantly Arable with Some Livestock).
- (G) Those in (E) (ii) were also divided into two groups :—
- (i) less than 25 livestock units per 100 acres. (Cropping with Livestock of Some Importance).
 - and (ii) more than 25 livestock units per 100 acres. (Cropping with Livestock of Considerable Importance).
- (H) Other holdings. These consist of a residue of holdings which could not be placed in any of the categories listed above.

(8) Only 61 per cent of all holdings can be regarded as full-time farms but these have 95 per cent of the acreage of crops and grass, 96 per cent of the hired workers and 94 per cent of the tractors of the Province.

(9) The average size of all holdings was 80 acres but full-time farms had 124 acres of crops and grass, part-time holdings 10 acres and spare-time holdings four acres.

(10) One third of all full-time farms were Dairy farms. Predominantly Arable farms made up a further one sixth but there were few specialist farms. The remainder, just over two fifths, could be regarded as 'mixed' farms.

(11) For each type a description has been given of the distribution of farms between counties and size groups, of the employment of labour, of the use of land and of the carry of livestock.

(12) An analysis has been made of the age of heifers at first calving on Dairy farms and of the extent to which Dairy farms of various sizes are able to grow feeding stuffs for their livestock.

(13) As farm size increases the proportion of land under permanent grass declines and so does the intensity of livestock carry. Large farms have proportionately more cattle and sheep and fewer pigs and poultry than small farms.

(14) Farms below 25 acres have a distinctive pattern of land use and livestock carry but there is comparatively little difference between the organisation of farms between 25 and 100 acres and that of larger farms.

(15) The study of Livestock farms has drawn attention to a number of farms in Derbyshire which specialise in the rearing of dairy herd replacements.

(16) The agricultural statistics suggest that the Province is a net importer of store cattle and that Dairy farms have a small net surplus of cattle for disposal to other farms.

(17) The distribution of the various types of farms has been illustrated with dot diagrams. These show that although certain types are predominant in many areas farms of different types are closely intermingled. There is no evidence that a distinct soil type such as the Nottinghamshire Forest Sand supports any distinctive type of farm.

(18) It is shown that many Types of Farming are found within each Type of Farming Area but in many Areas certain Types of Farming are clearly predominant.

(19) The East Midlands Farm Management Survey sample has been examined in the light of the information available about Types of Farming and Type of Farming Areas. Important differences have been noted and it is suggested that the objectives and methods of sampling require examination and definition.

(20) The results of this classification have been compared with those of the National Farm Survey. It has been shown that part-time *farmers* do not necessarily occupy part-time *farms*. For some purposes this distinction may be of considerable importance. Part-time holdings over 5 acres in size in the National Farm Survey averaged 49 acres in size and in this classification 13 acres.

(21) Comparisons have been made between different types and sizes of farms of the labour requirements per 100 acres, persons available and the work performance per person. Total requirements of labour per 100 acres declined as farm size increased but performance per man increased except on farms of over 700 acres.

(22) It is suggested that a workable system of farm classification is essential for the development of co-ordinated research and advisory work. The need for a classification relating to the whole of England and Wales is stressed.

THE PATTERN OF FARMING IN THE EAST MIDLANDS.

CHAPTER I.

INTRODUCTION.

The Fourth Book of Moses, called Numbers, tells how Moses took "the sum of all the congregation of the people of Israel after their families, by the house of their fathers from 20 years old and upwards, all that are able to go forth to war in Israel" and records the classified results of a census taken about 3,500 years ago.

Moses was seeking information of military value but the majority of censuses and returns serve more peaceful and constructive ends. Agriculture is perhaps the industry which can boast of the longest period of recorded history of any in this country. An unbroken record of the acreages of crops and numbers of stock on farms in the United Kingdom is available since the year 1866⁽¹⁾, and the published Agricultural Statistics contain a wealth of information. They show the distribution of crops and livestock by counties, the numbers of holdings of different sizes and in some years, the acreages of crops and the numbers of stock to be found within particular size groups. Other (unpublished) tabulations are available in the statistical departments of the various Ministries. There is much to be learned from a careful study of these published and unpublished tabulations. They show the location of the production of the main farm enterprises in the country and the trends over a period of years, describe the growth and development of the food production campaign during periods of war and provide an indication of the success or failure of various lines of agricultural policy.

The Agricultural Statistics furnish a reasonably complete and accurate picture of the aggregate position on the National farm, that is, taking the whole country to be one vast farm. But a part from showing the geographical distribution of production they reveal very little about the internal structure of the industry.

Agriculture, in common with fishing and forestry, is a primary industry and a way of life to many of its producers. But a very

(1) The first printed volume is for 1867, but for most items results obtained in a preliminary Census of 1866 are included. Earlier efforts to collect Agricultural Statistics had been made as, for example, the 1801 Crop Returns furnished by the Clergy for each parish. A printed form was used. Some of the 1801 Crop Returns have been printed. For example W. G. HOSKINS. *Studies in Leicestershire Agrarian History : The Leicestershire Crop Returns of 1801.* 1949. The Leicestershire Archaeological Society.

considerable number of these producers have other occupations and sources of livelihood. Their production from the holdings is often for consumption within their own households and not for sale. They may be able to carry on production with very little in the way of raw materials—seeds, and fertilisers. Since they consume the bulk of their own produce, they are not much affected by the level of price or by changes in prices. How many so-called “farmers” really fall into this category?

The significance of such distinctions from the point of view of agricultural policy is evident. If between one third and one half of our farmers are in fact producing mainly for domestic consumption and not for the market they may not be greatly affected by changes in the cost of labour, feed and fertilisers. Neither will they respond to price and other incentives which operate through the produce sold off the holding. How much land, how much labour and how much capital do these “holdings not farms” utilise? What is their contribution to total production and to the total quantity sold off the national farm for consumption by the non-farm community?

The segregation of farms from other holdings enables the student, the advisor or the politician to obtain a much clearer picture of the size of farm businesses and of individual enterprises on commercial holdings. The question then arises—Is it possible to group farms into a few simple distinct and clearly recognisable types? Farms in each of such groups may all have the same production and management problems—problems fundamentally different from those besetting other groups of farmers. The terms, dairy, arable, poultry or pig farms are commonly used but little attempt has been made to define the characteristics of each type or to estimate how many farms there are of each type. It is particularly important at a time when every effort is being made to increase the output of our domestic agriculture that there should be more knowledge of the resources used by, and the contribution to production of, each type.

For many years agricultural economists have collected data regarding the financial results, and the cropping and stocking of farms of different types. But these studies have been based on samples and it is important to know to what extent these sample results are representative of the areas from which they have been drawn. This is particularly important when these results are used in the Annual Price Review under the provisions of the 1947 Agriculture Act.

The development of farm management advisory work has created a demand for more detailed information regarding the characteristics of various types of farms. Members of the National Agricultural Advisory Service are being asked not only about manuring and cultivations, but about problems of organisation and management. It is, therefore, necessary to consider whether there are means of identifying farms with similar problems of organisation and management and thereby economising time and effort spent in advisory work. It is often said that upland areas such as parts of North Derbyshire should abandon milk production in favour of livestock rearing. It is clear that a classification of farms would be a most useful starting point for a study of such a hypothesis.

The research worker, working with limited resources, must often rely on the study of a sample of farms or enterprises and the validity of his conclusions depend very largely on how effectively his sample has been chosen. A classification of farms, by indicating where the bulk of production is to be found, should materially assist the selection of appropriate samples and the development of research on a scientific basis.

The main purpose of this study may be summarised briefly under the following five heads.

- (1) To determine the number of holdings with enough resources of land, crops and stock to provide a man with a full-time occupation. In other words, to divide holdings into full-time, part-time and spare-time groups.
- (2) To group full-time holdings according to the type of farming followed and to bring together those holdings with similar problems of organisation and management which may be expected to react in the same way to given changes in economic conditions.
- (3) To study and map the location of different types of farming within the Province.
- (4) To estimate the total resources of land, labour and other productive resources utilised by each type of farming group.
- (5) To suggest ways in which this classification and extensions of it may be used to assist the solution of many of the problems of a research, advisory and administrative nature.

Source of Information.

This study has been based almost entirely on the 4th June, 1947 Agricultural Returns and the January, 1948 Census of Machinery. The courtesy of the Ministry of Agriculture and Fisheries in making available this information is gratefully acknowledged. Without it this study could not have been carried out.

Limitations of Study.

(1) At the time the work on this study was started, the June returns for 1947 were the most recent which could be made available. The basic data, therefore, relates to a period six years removed from the date of writing. Many changes occurred within this period, particularly as regards farm mechanisation and the development of pig and poultry production. There is no obvious way of assessing the effect of these changes on many of the groupings described in this report, but there is no reason to suppose that the main conclusions of the study are not still valid.

(2) Limitations of staff resources made it necessary to use sampling techniques. For this reason, it will be found that some of the figures in this report do not agree exactly with those in the published Agricultural Statistics. But such discrepancies are, in fact, of no real importance except for items such as glasshouses which, of course, occur only on very few holdings. (See Appendix I. pp. 168-169).

(3) It will be seen that an estimate of the man work units required to manage crops and stock is an important feature of the classification. It is fully appreciated that there may be much difference of opinion regarding the scale of labour requirements adopted and also regarding the limits chosen for segregating full, part and spare-time holdings.

(4) Finally, there are two limitations which stem from the Agricultural Returns themselves, namely, the existence of detached fields among Returns which should relate only to units farmed separately and the lack of any distinction between beef cows and dairy cows. Both these points are discussed in more detail below.

Arrangement of Report.

After reviewing some other attempts at a classification of farms, the basis adopted for the purposes of this study is explained. Then a brief account is given of the distribution of farms in the East Midlands by type and size. A comparison of results of some other studies follows. Finally, some general implications from the stand-point of research and advisory work are considered.

CHAPTER II.

REVIEW OF OTHER RELEVANT STUDIES.

(a) In Great Britain.

(i) 1867-1885.

In Great Britain the area of crops and the number of livestock have been ascertained annually in June since 1866 by means of returns completed by occupiers of land. Until 1926, these returns were voluntarily obtained—originally from occupiers of more than one quarter of an acre and later from occupiers of all holdings of over one acre of agricultural land other than land in gardens and allotments. In the early years, before the establishment of the Board of Agriculture and Fisheries, the details were collected by the officers of the Inland Revenue Department and summarised by the Statistical Department of the Board of Trade.

Those responsible for the compilation of the early agricultural returns of this country recognised many of the problems listed in Chapter I. The report for 1875⁽¹⁾ says "It is desirable to repeat the explanation that the Agricultural Returns for Great Britain are ordered to be obtained for every separate Holding of cultivated land above one quarter of an acre in extent, with the exception of land attached to houses as garden ground and of detached Allotments held and cultivated by agricultural labourers and artisans It should be remembered in connection with the number of returns obtained from Occupiers of land that some Occupiers of land have more than one holding and therefore the actual number of persons holding land cannot be ascertained from these Returns."

Aggregate figures for the country and for each county comprise the main bulk of the published statistics but in 1875, 1880 and 1885 the collecting officers were directed to prepare an additional and special Return to show "the number of Holdings of different sizes, the total Acreage occupied by each class of Holdings, and the numbers of Horses, Cattle, and Sheep thereon."⁽²⁾

In 1878, the returns were grouped on a very rough type of farming basis by showing separate totals for the "Grazing" or "Western" Counties and the "Corn" or "Eastern" Counties. In the following

(1) BOARD OF AGRICULTURE AND FISHERIES. *Agricultural Statistics of Great Britain.* Cd. 1303. 1875. p. 6.

(2) Ibid.

year, three Type of Farming Areas were selected, namely pastoral, corn, and mixed pastoral and corn counties.⁽¹⁾ The tabulations published in 1880 were unusually detailed (incidentally they were dated as early as 25th September, 1880) but no further classifications according to size of holding or type of farming were introduced. In 1881 the number and acreage of unoccupied holdings was shown separately.

(ii) 1907-1911.

The next step forward appears to have been taken in 1907. The following extract from the report on the Agricultural Returns for that year puts the issue clearly.⁽²⁾

"It has frequently been pointed out that the Agricultural Returns necessarily comprise a certain proportion of holdings which can scarcely be regarded as being occupied for the primary object of farming as a source of profit, but may be considered rather as appanages to a residence which increase its amenities and provide occupation and interest to persons whose principal avocations lie in other directions. The distinction between farming for pleasure and farming for profit, although fairly understood in a general way, is almost incapable of definition in precise terms. From one point of view every person who grows crops or keeps farm stock is a farmer, whatever his object may be in occupying the land. But it is evident that between the professional farmer, properly so-called, to whom the occupation of land or the breeding or feeding of stock is a means of livelihood, and the amateur to whom the success or failure of his farming operations is a matter of comparatively slight importance, there is a substantial difference. At any rate it could not fail to be of interest if it were possible to differentiate the two classes, or at least to be able to form some estimate of the deduction which should be made from the total Returns in respect of those by whom the occupation of land is regarded as a matter of comparative unimportance in a pecuniary sense.

An attempt to obtain data for such an estimate was made for the first time this year. At the foot of the

(1) For definition of corn, pastoral and mixed see BOARD OF AGRICULTURE AND FISHERIES. *Agricultural Statistics of Great Britain* 1879. pp. 10 and 11.

(2) BOARD OF AGRICULTURE AND FISHERIES. *Agricultural Statistics of Great Britain* 1907. Vol. XLII part 1. Cd. 3870. p. 7. H.M. Stationery Office, London.

schedule each occupier was invited to state if he did not occupy the land for business purposes or as a source of income. All who did not thus voluntarily exclude themselves from the category of those who regarded their farming as a business are considered as coming within the ranks of farmers in a commercial sense."

This particular line of enquiry was only pursued in the two years 1907 and 1911 and it is perhaps significant that the only mention of it in the official report is that quoted above. It was revealed that 94 per cent of all holdings in Great Britain were farmed for business. The position by counties and size of holding groups in 1907 was as shown in Table 1.

The National Farm Survey of 1941⁽¹⁾ showed that 86 per cent of occupiers of holdings of more than five acres of crops and grass in England and Wales regarded themselves as full-time or part-time farmers. The estimated proportion of occupiers farming for business in 1907 on holdings of more than five acres was 96 per cent.

TABLE I.
HOLDINGS FARMED FOR BUSINESS 1907.(1)

Size of Holdings	England	Wales	Scotland	Per cent Great Britain
Above 1 and not exceeding 5 acres	86.5	91.6	96.4	88.8
Above 5 and not exceeding 50 acres	93.3	95.7	97.9	94.3
Above 50 and not exceeding 300 acres	98.3	98.4	99.1	98.4
Above 300 acres	98.7	98.0	99.4	98.8
All sizes	93.5	95.8	97.9	94.4

(1) BOARD OF AGRICULTURE AND FISHERIES. *The Agricultural Output of Great Britain*, 1908. H.M. Stationery Office, London, 1912. Cd. 6277.

It was recognised at the time that the results of such an enquiry could only be very approximate and it is probable that the enquiry failed to identify those people who were not "professional farmers—properly so-called" but who nevertheless were not "those by whom the occupation of land is regarded as a matter of comparative unimportance in a pecuniary sense." Only the real hobby farmers would be prepared to say that they were not farming for business. Many spare-time farmers undoubtedly regard the produce of their holdings as a very welcome addition to their income from other sources.

It is worth noting that in both enquiries the same counties (Surrey, Middlesex, Hertford, Sussex, Hampshire and Berkshire)

(1) MINISTRY OF AGRICULTURE AND FISHERIES. *National Farm Survey of England and Wales. A Summary Report* (1941-43). H.M. Stationery Office, London. 1946. p. 91.

are shown amongst those with the lowest proportion of holdings held by full-time and part-time farmers.

(iii) 1908.

The Report on the Agricultural Output of Great Britain⁽¹⁾ deals with the results of a special enquiry, taken in June, 1908 in connection with the Census of Production Act 1906. It is of interest because in addition to grouping holdings according to size, they were also put into three divisions depending on whether they consisted only of arable land, or pasture land or of both arable and pasture land. This appears to be the first attempt to classify individual holdings, even very approximately, by type.

(b) In England and Wales.

(i) The Agricultural Atlases.

From 1912 onwards, the agricultural statistics for England and Wales and for Scotland were published separately and since virtually all work on problems of farm classification appears to have been based on the Agricultural Returns, it is convenient to refer first of all to England and Wales and then to the work done in Scotland.

The publication in 1921 of an Agricultural Atlas of Wales⁽²⁾ represented another step in the description and analysis of agriculture in this country. The geographical distribution of crops and livestock is very largely determined by variations in soil and climate and in a general way this distribution reflects the type of farm which is predominant or typical of different localities. It cannot provide any indication of the number and size of farms of each type, neither can it reveal whether or not farms of different economic types are to be found within the same localities. This was based on parish totals from the Agricultural Returns of 1918. A similar atlas,⁽³⁾ but based on data relating to England and Wales for 1918, was published in 1925. A revised edition based on the statistics for 1928 was published about 1932.

(1) BOARD OF AGRICULTURE AND FISHERIES. *The Agricultural Output of Great Britain*, 1908. H.M. Stationery Office, London. 1912. Cd. 6277.

(2) ORDNANCE SURVEY (FOR MINISTRY OF AGRICULTURE AND FISHERIES). *An Agricultural Atlas of Wales* 1921. H.M. Stationery Office, London. 1921.

(3) ORDNANCE SURVEY (FOR MINISTRY OF AGRICULTURE AND FISHERIES). *An Agricultural Atlas of England and Wales*, 1925. H.M. Stationery Office, London. 1925.

(ii) 1924-25.

The next attempt at providing a classification of holdings is to be found in the report on the Agricultural Output of England and Wales 1925⁽¹⁾. The following extract from this report⁽²⁾ provides an excellent summary of the general position and explains what was to be attempted.

"Little has been done in the past in the direction of classifying holdings except by size, but any classification by size alone tends to combine under one heading farms which are, it is true, of the same area, but which differ very considerably in the character of their farming; for example, farms that are mainly arable and devoted to the growing of corn and other crops become mixed with farms of the same area which are mainly pasture and entirely different in type. A division by the nature of the business—e.g. sheep farming, dairy farming, etc.—is not, unfortunately, practicable owing to the fact that no clear-cut line of demarcation exists. On the present occasion an attempt has been made to meet this difficulty to some extent by dividing the agricultural holdings of this country, excluding small holdings under 20 acres and excluding fruit and vegetable farms and poultry farms, into three groups which afford a rough indication of the nature of the farming carried on, viz. (1) arable farms with 70 per cent and over arable land, (2) pasture farms with 70 per cent and over pasture land, and (3) mixed farms—i.e., the remaining farms lying between these two extremes. By an examination of the extent of the crops and the number of livestock on the holdings in these three groups, it is possible to get a clearer idea of the average character of the farms in the country than would be obtained if they were merged together and classified merely by size. It is necessary, however, to remember that there are many instances included in the returns where the word "holding" is misleading. The agricultural returns are obtained from occupiers of all agricultural land exceeding one acre in extent, and agricultural land is defined as including land used as 'grazing meadow or pasture land or orchard or any land used wholly or mainly for the purpose of the trade or business of a market gardener or nurseryman.' There is, consequently a good deal of pasture land in separate and detached fields,

(1) MINISTRY OF AGRICULTURE AND FISHERIES. *The Agricultural Output of England and Wales*, 1925. H.M. Stationery Office, London, 1927. Cmd. 2815.

(2) Ibid. pp. 80-81.

or in parks, or attached to residential properties which is separately and quite properly returned, but these parcels of land may or may not be farmed for business. In any case, they are not what is usually understood by the expression 'agricultural holdings.' In the main, however, these separate pieces of land are found in the groups under 20 acres, and, broadly speaking, the holdings above that size are usually farms or small holdings. On the other hand, the land included in the groups below 20 acres is very mixed in character."

Although the desirability of classifying farms according to the nature of their business was recognised the conclusion was reached that such a classification was impracticable because of the absence of clear-cut lines of demarcation. The segregation of holdings of under 20 acres was intended to eliminate the bulk of the non-commercial farms, but the context implies that all the fruit and vegetable and poultry farms were considered to be commercial farms (or economic units). No attempt was made to define fruit and vegetable and poultry holdings precisely and it was admitted "that there must inevitably be a large number of border line cases which a slightly different standard of judgement would transfer from one category to the other."⁽¹⁾

Reference is made to pasture land in separate and detached fields which may or may not have been farmed for business but there is no mention of the possibility that many of these detached portions were in fact attached to other farms (and probably should not have been entered on a separate Agricultural Return).

The limits chosen for the type grouping of individual farms—70 per cent or more arable or 70 per cent or more pasture—may be compared with that of 66 per cent adopted in preparing the Types of Farming map of England and Wales (see page 24). In 1924 farms and holdings of 20 acres and over, other than fruit and vegetable holdings and poultry holdings, accounted for 53 per cent of total holdings and 93 per cent of the total acreage. In 1947, in the East Midlands full-time farms, other than market gardens and poultry farms, represented 57 per cent of the holdings and 94 per cent of the acreage of crops and grass. The average size of holdings over 20 acres in 1924 was 111 acres compared with an average in 1947 for full-time East Midlands farms of 124 acres of crops and grass. These

(1) MINISTRY OF AGRICULTURE AND FISHERIES. *The Agricultural Output of England and Wales 1925.* H.M. Stationery Office, London, 1927. Cmd. 2815.

comparisons suggest that by drawing an arbitrary line at the 20 acre level a surprisingly effective division of holdings into farms and 'holdings not farms' was achieved.

The Agricultural Returns for 1924 were analysed in detail to show the cropping and stocking of arable, pasture and mixed farms of various sizes and maps were prepared to show the geographic incidence, by counties, of each of these three types. Unfortunately, the detailed figures for each county were not included in the published report.

Despite the comments (see page 18) regarding the difficulty of a division by the nature of the business, the segregation of fruit and vegetable farms and poultry farms constitutes an attempt to do precisely this. Fruit and vegetable farms were taken to be "those on which half the area or more appeared to be devoted to these crops." No definition of a poultry holding is given in the report. Nevertheless a rough comparison with East Midlands data for 1947 shows a general similarity in size, in the pattern of land utilisation and in livestock carry.

FRUIT AND VEGETABLE FARMS AND MARKET GARDENS—1924 COMPARED WITH 1947.

TABLE 2.

	England and Wales 1924	East Midlands 1947
	Fruit and vegetable farms	Market gardens
	Acres	Acres
Average size	13.3	21.7
Per 100 acres crops and grass		
Potatoes	14.2	9.4
Vegetable crops	24.5	42.0(1)
Orchards and small fruit	29.5	11.7
Other crops	17.0	22.7
Permanent grass	14.8	14.2
	Nos.	Nos.
Cattle	4.8	7.3
Sheep	12.0	0.7
Pigs	36.2	19.0
Fowls	267.7	278.6

(1) Including flowers and nursery stock.

POULTRY FARMS—1924 COMPARED WITH 1947.

TABLE 3.

	England and Wales 1924	East Midlands 1947
	Acres	Acres
Average size	7.0	10.0
Per 100 acres crops and grass		
Corn crops	3.9	12.5
Fruit	5.5	1.5
Other crops	8.0	16.6
Permanent grass	82.6	69.4
	Nos.	Nos.
Cattle	11.1	23.3
Sheep	7.3	3.0
Pigs	59.1	43.2
Fowls	11,794.0	12,483.4

The above tables have been prepared to show that the same general conclusions and impressions can be derived from very different but simple and straightforward approaches. A system of classification which would decisively divide all holdings into closely defined groups would be too complicated to apply. Evidence has shown, on the other hand, that much valuable information may be obtained from a simple rule of thumb method. Individual holdings may be misplaced but the vast majority of holdings will be grouped appropriately.

(iii) 1935 to 1938. An Economic Survey of Buckinghamshire⁽¹⁾

This study tackled the problem of farm classification from the angle used in analysing the Agricultural Statistics for 1907 and 1911; (see page 15) that is, by trying to determine how many holdings were "farmed for business". Starting with a list of the names and addresses of the 4,521 occupiers of land in Buckinghamshire who completed the June Agricultural Returns for 1935 an attempt was made to trace each one and to collect by independent enquiry information about the utilisation and tenure of land in their occupation. The address list supplied by the Ministry of Agriculture had to be modified to allow for changes in parish boundaries, holdings absorbed into other holdings, new holdings not covered by the returns and for repetitions. The adjusted number of occupiers was found to be 4,254.⁽²⁾ Repetitions caused by far the most important modifications. Of the total repetitions found, 308 were in respect of persons having more than one holding or plot of land, 30 were in respect of holdings falling in two or more parishes and 91 were plots of land let temporarily for grass keep.

The problem of amalgamations or repetitions is extremely difficult to overcome despite the careful instructions which accompany each return. A separate return is required for each holding which is farmed separately. Holdings farmed together or outlying pieces of land farmed with the main holding should be included in one return. But the interpretation of the term 'farmed separately' has been left to the discretion of the person completing the return. Where a holding overlaps a parish boundary, it should all be returned in the parish in which the residence is situated. Summer grazings are another source of confusion. In 1935, the official instructions were

(1) EDGAR THOMAS and C. E. ELMS. *An Economic Survey of Buckinghamshire Agriculture. Part I. Farms and Estates.* University of Reading, Agricultural Economics Department. 1938. Survey Studies 4. Bulletin 51.

(2) Ibid. Chapter 2.

that "summer grazings should be returned by the person who has taken the summer grazing".⁽¹⁾

Having accomplished this essential preliminary work the holdings were classified according to their economic type. This was done "from the standpoint of the occupiers and classifying as many as possible of these according to the degree of their economic dependence on their holdings." Nine classes of holdings were identified, as follows :

- Class I Full-time farms.
- Class II Part-time farms.
- Class III Spare-time farms.
- Class IV Home and hobby farms.
- Class V Accommodation land held by businessmen
and tradesmen.
- Class VI Land sub-let.
- Class VII Land not in agricultural use.
- Class VIII Vacant holdings.
- Class IX Unknown.

The essential points in the definition of these holdings were :—

Full-time farms—Those where the occupier was fully engaged on the holding and dependent on it for a living.

Part-time farms—Those where the occupier had some employment in addition to farming but where farming was their major concern.

Spare-time farms—Those where the occupier had some *full-time* employment outside their holdings but at the same time ran their holdings for profit.

Home and hobby farms—These included

- (i) farms reserved and farmed by owners of estates.
- (ii) farms occupied by persons whose farming was really a hobby.
- (iii) land attached to country residences for the supply of domestic requirements rather than farmed as a source of profit.

(1) In 1947 the instructions asked for seasonal grazings to be returned by the occupier of the holding of which the land formed part; that is, by the person selling the grazing.

Accommodation land etc.—Land used by butchers, dealers, the grazing of delivery horses and for golf courses, recreation grounds, small parks etc.

Thomas and Elms compared the number of full-time and part-time farmers with the number of farmers shown by the 1931 Census of Population and found that the two estimates agreed very closely.⁽¹⁾ They concluded that these two groups might be regarded as 'bona fide' farmers i.e. persons depending almost entirely on their farms for their livelihood. They have in effect assumed that full-time and part-time farmers occupy full-time and part-time farms respectively. But if a full-time farm can be reasonably defined as a holding with sufficient resources of land, crops and stock to keep one man (the occupier) fully occupied and provide him with an appropriate standard of livelihood—then it is suggested that many part-time farmers in fact occupy full-time farms (see page 151). The significance of this proposition from the standpoint of the economics of the industry may well be considerable. A part-time *farmer* operating a full-time *farm*, may react to economic changes in almost exactly the same way as a full-time farmer and he may be just as efficient in the use of agricultural resources.

(iv) 1939 Types of farming map.

Early in 1939 a Types of Farming Map⁽²⁾ with an explanatory text was prepared by the Ministry of Agriculture. The objective appears to have been to map farming types for the whole country on a uniform basis. The explanatory notes state that accepted usage has been followed in interpreting 'farming type' by reference to farm organisation and farm practice. The following farming types were identified :—

Pasture Types.

- A. Predominantly dairying.
- B. Dairying supplemented by other enterprises.
- C. Grazing and dairying.
- D. Rearing supplemented by several other livestock enterprises.
- E. Mainly rearing and sheep grazing.

(1) THOMAS and ELMS. Op. cit. p. 26.

(2) MINISTRY OF AGRICULTURE AND FISHERIES, and LAND UTILISATION SURVEY OF BRITAIN. *Types of Farming Map of England and Wales*. Geographical Publications Ltd. London. 1941.

Intermediate Types.

- F. Mixed farming with substantial dairying side.
- G. Mixed farming with substantial rearing or feeding.
- H. General mixed farming.
- I. Corn, sheep and dairying.
- J. Farming based largely on wheat and cattle.
- K. Other intermediate types, with fruit, vegetables or hops.

Arable Types.

- L. Mixed farming based on arable production.
- M. Mainly corn and sheep farming.
- N. Corn and sheep farming, supplemented by cash crops.
- O. Mainly cash crop farming.
- P. Market gardening.
- Q. Other arable farming types.

Various

- X. Land of small agricultural value.
- Y. Marshes.
- Z. Varied farming on mixed soils, or unclassified.

It is explained, however, that these denote type of farming *areas* rather than types of farms as such but each area was "described by reference to the typical or most common type of farm within it and not as if it were one large farm".

Two broad principles of classification were used. The first was the proportion of arable land. Arable was taken to include leys of fairly short duration and land under crops, vegetables, fruit and flowers. Arable types were those with more than two thirds of the farmed land arable; intermediate—between one third and two thirds arable; and pasture—less than one third arable. These proportions were not, however, rigidly applied. The second principle of classification related to dominant enterprises, although secondary enterprises were not neglected. Dominance was judged according to the share of the farmer's energies and resources of all kinds absorbed by the enterprise.

Unfortunately the explanatory text leaves many questions regarding the classification unanswered. It is said that in Type A, dairying has the greatest importance and that indeed there is little else but dairying. But there is no indication of the proportion of revenue derived from milk or milk products. Is it 80 or 90 per cent?

How important are the other supplementary enterprises in Type B—
(a) in their contributions to net farm output and (b) in their demands on farm resources of all kinds?

It is clear that the actual lines of demarcation between adjacent type of farming areas must be very largely arbitrary. In countries such as England and Wales with such a diversity of types of farming this is unavoidable. Attention is drawn to the fact that there is a tendency for the degree of uniformity to decline in the vicinity of large towns. Despite this, there can be no doubt that such a map can provide an excellent bird's eye view of the general pattern of farming.

At the same time, there is some danger that undue importance may be attached to the Type of Farming Area method of farm classification and that the existence of many types of farms within a type of farming area may be overlooked or, at least, given inadequate recognition.

(v) 1941-43 National Farm Survey.

The National Farm Survey⁽¹⁾ of England and Wales was a unique undertaking because although it was carried out under the stress and strain of war its objects were for the most part of a long term character. These were summarised as follows⁽²⁾ :—

- “(i) to form a permanent and comprehensive record of the conditions on the farms of England and Wales.
- (ii) to provide a body of data which would be useful as a basis for post-war administration and planning and the formulation of post-war policy.
- (iii) to assist advisory and other educational work.
- (iv) to assist the war-time administration of County War Agricultural Executive Committees.
- (v) to provide material for statistical and cartographical analysis which would contribute particularly to objectives (ii) and (iii) above.”

For purposes of the present study only the sections dealing with the classification of occupiers by economic type and of agricultural holdings by type of farming and size are relevant. The data were

(1) MINISTRY OF AGRICULTURE AND FISHERIES. *National Farm Survey of England and Wales. A Summary Report* (1941-43). H.M. Stationery Office, London. 1946.

(2) *Ibid.* p. 2.

obtained from (a) an ad hoc survey record and (b) the 4th June Agricultural Census Return for 1941. The survey forms were completed by the staffs of the County War Agricultural Executive Committees and their district committees. Every holding of five acres or more was surveyed but the statistical analysis was confined to a stratified sample of about 14 per cent of the total number of holdings included in the survey.

For National Farm Survey purposes holdings which were under the same occupancy and day-to-day management and had a common source of labour, machinery and other permanent equipment were regarded as forming one single unit and included in one survey record. *Self contained* holdings under the same occupancy, i.e. holdings with adequate supplies of labour etc. were not amalgamated. The Crop Reporters have the duty of applying this same general rule for the purposes of the Agricultural Returns but the fact that the Farm Survey related to a total of roughly 290,600 holdings; compared with a total of about 300,000 shown in the Agricultural Returns, was taken as evidence that the Farm Survey recorders applied this rule more strictly. They were able to do this because of their detailed local knowledge. The 1947 classification of East Midlands holdings is based on the June returns and, except in Derbyshire, no attempt was made at further amalgamation. But there is evidence that even in 1947 the complete amalgamation of detached or incomplete holdings was not being achieved by the Crop Reporters.

The classification of occupiers by economic type was done very much in the manner adopted by Thomas and Elms. (see page 22) The assumption was made that a classification of occupiers would automatically result in a similar classification of holdings or farms. The validity of this assumption will be considered in more detail below (chapter XV), when the results of the National Farm Survey for the East Midlands are compared with those of the present study.

One section of the National Farm Survey report deals with the number of holdings of each type and size within each of the Type of Farming areas depicted on the Types of Farming Map (see page 23). This was an attempt to define in physical and quantitative terms the classification of types as originally mapped in 1939. It is emphasised that the Types of Farming Map denotes that within certain areas, a particular type of farm is typical or most common, *not* that all farms in an area are of one type. The need for this warning is illustrated by the fact that 13.3 per cent of the holdings in the Predominantly Dairying type area had no cows.⁽¹⁾ There can be no doubt of the

⁽¹⁾ Ibid. Table 4. p. 17.

value of the information regarding the proportion of acreage and live-stock within each main Type of Farming Area but, on the other hand, the data would have been more valuable if it could have been analysed separately for full-time and 'other farms' and 'holdings not farms'.

The task of defining and mapping the type of farming areas of England and Wales was assisted by the operation of the Farm Management Survey Scheme. Since 1936, each Provincial Agricultural Economics Department⁽¹⁾ has by arrangement with the Ministry of Agriculture, collected details of the financial results, cropping, stocking and labour supply on a sample of 200 to 300 farms drawn from the main types of farming within each province. It is probable that there was a close connection between these two lines of work prior to the 1939-45 war. Since then the Type of Farming Areas as defined on the map have been the basis of sampling for the Farm Management Survey and the published results of the Survey have been analysed on the same basis.⁽²⁾

Land Utilisation Survey of Britain.

As its name implies the purpose of the Land Utilisation Survey was to record the present use of every acre in England, Wales and Scotland, to record this information on maps and to analyse the findings by a series of county reports. To some extent the progress of the work was governed by the availability of funds. Fortunately, reports are available for each of the East Midland Counties.⁽³⁾

The county reports include an outline of the geographical background under the headings of Geology and Relief, Climate and Soils, an outline of land utilisation (similar in many respects to that provided by the Agricultural Atlas), a study of land-use regions and a note of the history of land utilisation. As a rule the characteristics of the various land-use regions are illustrated by descriptions of the organisation, cropping and stocking of specimen farms. No attempt

(1) These are now located at the Universities of Wales, (Aberystwyth), Manchester, Durham, Leeds, Nottingham, Bristol, Cambridge, Reading and London (Wye College).

(2) See for example MINISTRY OF AGRICULTURE AND FISHERIES *Farm Incomes in England and Wales 1949-50. A Report based on the Farm Management Survey*. H.M. Stationery Office, London. 1952. Farm Income Series No. 3.

(3) LAND UTILISATION SURVEY OF BRITAIN. *The Land of Britain County Reports*:—
Part 53 Rutland—MISS M. E. BROUGHTON. 1937.
Part 63 Derbyshire—A. H. HARRIS and H. C. K. HENDERSON. 1941.
Part 60 Nottinghamshire—K. C. EDWARDS. 1944.
Parts 76-77 Kesteven and Lindsey—L. DUDLEY STAMP. 1942.
Part 57 Leicestershire—D. M. AUTY. 1943.
Geographical Publications Ltd., London.

is made to classify holdings according to economic type or to correlate type of farming with the type of soil and the geological history of an area. But the reports do shed a valuable light on the close relationship between type of soil and the pattern of farming. Unfortunately, they are almost entirely descriptive and contain little information about the acreage of land, or the numbers of farms or livestock associated with each soil or land-use region.

Scotland.

(i) 1927. Berwick, Roxburgh and Selkirk.

One of the pioneers of the study of farm classification problems was the late Dr. J. S. King of the Department of Agriculture for Scotland, working with the Agricultural Returns for June 1927. Dr. King carried out an extremely detailed and careful study of the counties of Berwick, Roxburgh and Selkirk.⁽¹⁾

First of all, detached parcels of land were amalgamated with their parent holdings. The remaining holdings were regarded as economic units and split into four main groups.

- (1) Farms—exclusive of small holdings.
- (2) Small holdings in the occupation of persons describing themselves as farmers.
- (3) Small holdings used for agricultural purposes, but which are farmed by persons who describe themselves as mainly engaged in some other occupation or calling.
- (4) Non-agricultural holdings i.e. land used incidentally to some trade or business of a non-agricultural character.

The distinction between Group 1 and Groups 2 and 3 was not entirely clear cut. The statutory definition of a small holding then operative i.e. one not exceeding 50 acres of land or £50 of rent was not strictly adhered to in marginal cases. On the other hand, if the occupier described himself as a farmer, a holding was included in Group 2 even if it appeared to have insufficient crops and stock to give the occupier a livelihood.

The four main groups were subdivided as follows :—

Class 1a—Hill Sheep Farms, Semi-arable sheep farms and farms of intermediate type.

(1) J. S. KING. *The Profitableness of Farming in Scotland*. Department of Agriculture for Scotland. H.M. Stationery Office, Edinburgh. 1931.

Class 1b—Subsidiary farm groups.

- Grassland holdings.
- Arable and miscellaneous farms.
- Dairy farms.

Class 2a—Small holdings.

Class 2b—Market gardens.

Class 3 —Semi-agricultural occupancies—These were according to the main source of income of the occupier.

- Craftsmen.
- Estate workers.
- Agricultural.
- Transport and roads.
- Industries and trade.
- Professional.
- Miscellaneous.
- Unknown.

Class 4 —Non-agricultural holdings.

- Trade and residential.
- Other.

No precise definitions were laid down for the subgrouping of the farms. It is very probable that different persons with practice and local knowledge working independently would place the majority of farms in the same groups but no such uniformity could be expected regarding farms on the margin between two or more groups. This clearly constitutes a limitation but it does not destroy the value of the classification as a method in the first steps towards describing the characteristics of the agriculture of an area.

Class 1a contained 83 per cent of all the full-time farms in the area but Dr. King was fully conscious of the fact that it included a great diversity of farm types. He concluded that because of the considerable interdependence of these types, the only practicable method of subdivision was on the basis of rent per acre. Class 1a was therefore divided into rent per acre groups and details were given of the cropping and stocking of each rent group. It was claimed that, within each rent group, the balance of crops and stock was reasonably homogenous.

The general purpose of the study was to assist with the task of determining the profit status of the whole range of farms by means of accounts drawn from a sample of them. Dr. King approached this

problem by analysing the size distribution and the sources of farm income of the farms within each rent group. With the resources available the total size of sample was apparently limited to 45 and as the author was of the opinion that a minimum of 15 farms was necessary for analytical purposes he concluded that only three groups could be sampled. He suggested the total sample be allocated as follows :—

- 15 farms rented at between 7s. 0d. and 12s. 0d. per acre and ranging in size between 400 and 800 acres.
- 15 farms rented at between 17s. 0d. and 22s. 0d. per acre ranging in size between say 200 and 500 acres.
- 15 farms rented at between 32s. 0d. and 37s. 0d. an acre and ranging in size between 100 and 400 acres.

He concludes⁽¹⁾ "In terms of the financial results from these three groups it would be possible to assess, with fair accuracy, the economic status of the whole range of 1,011 farms (i.e. the total in Class 1a), having regard to the graduated changes in the importance of the different elements in the farm economy in all the groups represented. Moreover, each group of 15 farms in the sample and of approximately equal size would show under normal conditions a considerable range in profit or loss from such differences it should be possible to draw conclusions relating to the more desirable methods of farm management."

There is no doubt that an adequate classification of farms according to type will enable a sample to be drawn which will yield information about the sample universe or the efficiency of various farming practices. But the nature of the classification and the type and size of the proposed sample render the validity of Dr. King's conclusions somewhat doubtful.

(ii) 1927 Scotland.

The task indicated by Dr. King was continued in a modified form by his colleagues after his death. The scope was enlarged to embrace the whole of Scotland, holdings being grouped as follows⁽²⁾ :—

Farms	—Dairy.
	—Hill sheep.
	—Other.

(1) Ibid. p. 146.

(2) W. E. HEATH. *A New Classification of Holdings.* The Scottish Journal of Agriculture. Vol. XXV. No. 3. July, 1945.

Smallholdings —Dairy.
—Poultry.
—Pigs.
—Miscellaneous.

Market gardens.

Supplementary small holdings and crofts.

Landless holdings.

Non-agricultural holdings.

Ungroupable returns.

The types chosen and the general basis of classification were very similar to those used by Dr. King. Three points were relied on for much of the work (a) the statutory definition of a small holding as being of 50 acres or less in size and £50 or less of rent (b) the occupational data contained in the Scottish Valuation Rolls and (c) the registers of dairy herds maintained by local authorities.

No attempt was made to develop and apply precise definitions. This was true of all groups and there is in fact nothing to indicate into which groups borderline farms would fall. Much was left to the judgement of the persons who performed the work of tabulation.

Even at this stage it can be said that workers in Scotland paid more attention to the status of the farm (as opposed to the farmer) than in England and Wales.

(iii) 1947 Scotland.

Starting with the benefit of the experience gained in handling the 1927 classification, the staff of the Farm Economics Branch of the Department of Agriculture for Scotland have completed a new classification⁽¹⁾ of Scottish Agricultural Holdings. The June, 1947 Agricultural Returns were used as a basis. This study must be regarded as the first *farm* classification in Great Britain because unlike earlier studies it did not rely in any way on grouping *farmers* according to their economic status.

All the Scottish Agricultural Returns for June, 1947 were examined and all detached (but incomplete) parcels of land amalgamated with their parent holdings. This was done very thoroughly and many more such amalgamations were found than in 1927. The distinction between full-time, part-time and spare-time farms was

(1) DEPARTMENT OF AGRICULTURE FOR SCOTLAND. *Types of Farming in Scotland*. H.M. Stationery Office, Edinburgh. 1952.

based solely on the man hours of work required by the crops and stock on the holding. (The same method was applied in the East Midlands. See Chapter III for details).

The basis of the subdivision of full-time farms into groups was the pattern of land-use and the type of livestock carried. This is apparent from the titles applied to these groups :—

Type 1—Hill sheep farms.

Type 2—Stock rearing farms.

- (a) With crop sales unimportant.
- (b) With crop sales relatively important.

Type 3—Stock rearing and feeding farms.

- (a) With crop sales unimportant.
- (b) With crop sales relatively important.

Type 4—Cropping farms.

- (a) With little or no livestock.
- (b) With livestock feeding.
- (c) With livestock.

Type 5—Dairy farms.

- (a) With crop sales unimportant.
- (b) With crop sales relatively important.

Type 6—Dairy with hill sheep farms.

Type 7—Horticultural.

Type 8—Intensive livestock farms.

- (a) Poultry farms.
- (b) Pig farms.
- (c) Mixed intensive farms.

Type 9—Unclassified.

The definitions attached to each type group are precise by comparison with other studies mentioned above but even so they appear to leave a good deal to the judgement of the person responsible for placing individual holdings in particular groups. It is not clear at what point crop sales change from being unimportant to being relatively important or just how many fattening stock are needed to qualify a farm for Type 3. Neither is it clear what level of milk sales was required of a dairy farm. This is admittedly a difficult point to resolve.

For some groups at least the importance of crop sales was judged by difference i.e. by deducting the acreage estimated to be required to feed the stock from the total crop acreage. The comparison of the stocking of different types of farms was based on the number of livestock units carried. The identification of dairy farms was materially assisted by the fact that (a) dairy cattle are normally distinguished from beef cattle in the Scottish Agricultural Returns and (b) that details of milk sales from each farm were available.

Summary.

There has long been an awareness of the need for a more detailed classification of holdings and particularly for a segregation of farms and 'holdings not farms'. The problem has been tackled in the main by determining the economic status of the farmer. The Scottish 1947 classification was the first to attempt to classify farms as opposed to farmers. In England and Wales a good deal of work has been devoted to defining and describing type of farming *areas* and this has shed valuable light on the structure of the industry.

The work already done in Scotland has demonstrated that farms can be grouped in a way which brings together those with the same general problems of organisation and management. It should be borne in mind that this has been done without access to figures of farm production and sales such as those widely used as a basis of classification in other countries, notably the United States.

CHAPTER III.

BASIS OF CLASSIFICATION.

The classification described in this report has been based primarily on the Agricultural Returns for June, 1947. When work on this study was put in hand in 1951 these were the most up-to-date which could be released by the Ministry of Agriculture. At that time (June, 1947) there were 32,241 agricultural holdings of one acre and above in the six counties⁽¹⁾ which form the East Midlands Province of the Provincial Agricultural Economics Service. This number was inclusive of those holdings totally composed of rough grazing land. It was felt that analysis of all these returns would be beyond the capacity of staff resources available and therefore, it was decided to proceed with the analysis and classification on a sample basis. An exception was made in Rutland and the returns of all the holdings in this, England's smallest county, were examined.

Basis of sampling.

Two recent surveys of agricultural holdings in Great Britain were based on samples. The National Farm Survey of England and Wales⁽²⁾ did in fact relate to all holdings of more than five acres of crops and grass but the detailed statistical analysis of the information collected was based on a stratified random sample drawn from the total of nearly 300,000 records. The Agricultural Survey of Scotland⁽³⁾ was done entirely on a sample basis and only the holdings included in this random sample were visited and surveyed.

The methods of statistical analysis adopted for the purposes of the National Farm Survey of England and Wales were largely devised by Yates and Kempthorne of the Statistical Department of Rothamstead Experimental Station. The sample of about 40,000 records was later tabulated mechanically. It was found that the standard errors of estimates based on this sample were such that the results could be regarded as adequately reliable.⁽⁴⁾

(1) Derbyshire, Leicestershire, Nottinghamshire, Lindsey, Kesteven and Rutland.

(2) MINISTRY OF AGRICULTURE AND FISHERIES. *National Farm Survey of England and Wales. A Summary Report* (1941-43). H.M. Stationery Office, London. 1946.

(3) DEPARTMENT OF AGRICULTURE FOR SCOTLAND. *Agricultural Survey of Scotland*. H.M. Stationery Office, Edinburgh, 1946.

(4) MINISTRY OF AGRICULTURE AND FISHERIES. *National Farm Survey of England and Wales. A Summary Report* (1941-43). H.M. Stationery Office, London. 1946. p. 72.

Since the East Midlands 'population' to be studied was essentially the same, it was decided to adopt substantially the method of sampling used in the National Farm Survey. Table 4 sets out the proportion of holdings sampled in each size of holding group and the number of holdings in the sample.

TABLE 4. PROPORTION AND NUMBER OF HOLDINGS IN SAMPLE.

Size group—adjusted acres	Sample taken (No. of farms)	No. of holdings in sample (excluding Rutland)	Rutland
1. 1—4.9	1 in 20	302	76
2. 5—24.9	1 in 20	397	96
3. 25—99.9	1 in 10	954	179
4. 100—299.9	1 in 4	1,585	190
5. 300—699.9	1 in 2	674	65
6. 700 and over	All farms	179	11
All groups		4,091	617(1)

- (1) All the holdings in Rutland were included in the sample. The Ministry of Agriculture were unable to supply all the returns for the Province but the number not received was so small that no attempt was made to trace and replace those which were missing.

Holdings were grouped and the sample drawn on the basis of the 'adjusted acreage' of each holding. In other words one sixth of the acreage of rough grazings was added to the acreage of crops and grass. But as few holdings had any rough grazing, in the majority of instances the 'adjusted acreage' was also the crops and grass acreage. Where rough grazings are found the adjusted acreage provides a rather better measure of the size of the unit. The actual distribution and importance of rough grazings will be discussed in more detail below.⁽¹⁾

Notes regarding the 'Population' sampled.

Since the classification was to be based on the Agricultural Returns of the Ministry of Agriculture no attempt was made to refine the population by the exclusion of some returns before drawing the sample. It is in fact doubtful whether it would have been possible to exclude any category of holding without anticipating much of the purpose of the classification itself. Several types of holdings were in fact excluded⁽²⁾ from the National Farm Survey population before drawing a sample for statistical analysis but the Farm Survey Record

(1) See Chapter X.

(2) These were (a) Holdings of less than five acres of crops and grass.
 (b) Holdings used entirely for summer grazing.
 (c) Holdings with more than three acres of crops under glass.
 (d) Land being used by institutions—prisons or hospitals.

See MINISTRY OF AGRICULTURE AND FISHERIES, 'National Farm Survey of England and Wales. A Summary Report (1941-43). H.M. Stationery Office, London. 1946. p. 71.

contained much more of the information required for such a process of elimination than an ordinary Agricultural Return.

The National Farm Survey omitted all holdings under five adjusted acres for two main reasons (a) while these holdings number some 70,000 they comprise less than one per cent of the total area of crops and grass in England and Wales and (b) separate arrangements had been made for a survey of horticultural holdings. It was felt that their inclusion would have added greatly to the volume of work involved without adding appreciably to its value.

The Agricultural Returns for June, 1947 show that in the East Midlands there were 5,684 holdings with between one and five acres of crops and grass and 539 holdings consisting of rough grazings only but the additional burden of classifying these holdings was accepted because it was thought that many were in fact market gardens and other specialist units.

Segregation of Farms and Holdings.

What is the difference between a 'farm' and a 'holding'? Throughout this report a farm has been regarded as a unit with enough resources in land, stock, buildings and equipment to yield to the occupier a main occupation. The term holding refers both to farms in this sense and to parcels and units of land that are not farms. Many of the holdings for which returns are made are, of course, attached to and operated from other holdings or farms.

An attempt was made to amalgamate those holdings which were not self contained units with their parent holdings. This was done by arranging all the returns for Derbyshire in alphabetical order and looking very carefully at all returns with similar signatures. It was found to be a laborious and time consuming operation and in view of the difficulty of identifying and amalgamating every detached portion, it was decided to draw the sample for Nottinghamshire, Leicestershire, Lindsey and Kesteven from the population without modification.⁽¹⁾ It will be seen in due course that many of these

(1) The significance of this decision is fully appreciated but with the staff resources available the alternative was the abandonment of the whole project. For more detailed discussions of the problem of the amalgamation of holdings see:

MINISTRY OF AGRICULTURE AND FISHERIES. *National Farm Survey of England and Wales. A Summary Report (1941-43)*. H.M. Stationery Office, London. 1946. p. 11.

DEPARTMENT OF AGRICULTURE FOR SCOTLAND. *Types of Farming in Scotland*. H.M. Stationery Office, Edinburgh. 1952. (Chapter XII).

EDGAR THOMAS and C. E. ELMS. *The Farms and Estates of Buckinghamshire*. University of Reading, Agricultural Economics Department. 1938. Survey Studies 4. Bulletin 51. (Chapters II & IV).

detached portions or incomplete units have been classified as grazings or 'holdings not farmed'. The total number of holdings in Derbyshire was reduced by 164 or by two per cent when the detached portions found were amalgamated. It is worth noting that the process of amalgamation in the National Farm Survey reduced the number of returns from 300,000 to 290,000 or by three per cent.⁽¹⁾

The labour requirements of Crops and Stock.

The first task with each Agricultural Return was, therefore, to decide whether it related to a 'farm' as defined above. This was done in every instance by calculating the labour required to produce the acres of crops and attend to the numbers of stock recorded on the Return. A full-time farm has been taken to be one which provides 2,200 or more hours of work per annum. This is equivalent to one man working 44 hours per week for 50 weeks. But in order to provide for some unavoidable underemployment of labour on small units, all those which required more than 1,800 hours of work have been regarded as full-time farms. These have been described as full time farms with some underemployment and unless otherwise indicated full-time farms in this report means those with a labour requirement exceeding 1,800 hours. Holdings with a labour requirement of between 600 and 1,800 hours have been classified as part-time and those with less than 600 hours of work as spare-time holdings. There was, however, no means of determining whether or not the operators of part-time and spare-time holdings had another occupation.

The hours assumed to be required per acre of crops or per head of stock are shown in Table 5. It would be wrong to regard these as averages which apply to the general run of commercial farms. They are almost certainly higher than those normally required on the average farm. Even so, there can be little doubt that the occupiers of many of the holdings classified as part-time and spare-time have no other occupation but spend all their time 'farming'.

In practice, this measure of size of business was found to be quite easy to apply. Many holdings could be placed at once in the correct group and it was only necessary to work out labour requirements in detail for borderline cases. The figure of 200 hours for cows and heifers in milk and cows in calf should really refer to dairy cows and not to beef cows, but the returns do not distinguish between beef

(1) MINISTRY OF AGRICULTURE AND FISHERIES. *National Farm Survey of England and Wales. A Summary Report (1941-43).* H.M. Stationery Office, London, 1946. p. 7.

and dairy cattle. It was appreciated that the use of this figure would give a generous measure of the labour requirements of some holdings.

ASSUMED LABOUR REQUIREMENTS OF CROPS AND STOCK.

TABLE 5.

	Man hours per annum (Per acre or per head)
	Per Acre
Field Crops	
Cereals	33
Potatoes and sugar beet	200
Roots, kale and cabbage	130
Rape	17
Hay	25
Pasture	6
Bare fallow	12
Other crops	300
Fruit and Vegetables for Human Consumption	
Peas and beans	200
Turnips, swedes, beets, and carrots	240
Brassicas	180
Onions and lettuce	600
Rhubarb	150
Other vegetables	490
Crops grown under glass	8,700 per acre or 200 per 1,000 sq. ft.
Other crops not under glass	300
Small fruit	300
Orchard fruit	150
Livestock	Per head
Cows and heifers in milk and cows in calf	200
All other cattle	45
All pigs	20
All sheep	7
Work horses	75
Fowls over six months	4
Fowls under six months	2
Ducks, geese and turkeys	4

Area under Cash Crops and Livestock Carry.

As a general rule, the use made of the land available will determine the characteristics of the business. For this reason, the proportion of the land on a holding under crops for sale and the number of livestock carried have been used as a guide to the type of farming carried out on full-time units. In the absence of specific information about the actual sales of crops from individual farms, it was necessary⁽¹⁾ to regard certain crops as crops for sale.

These were :—

Wheat	Flax
Barley	Market garden crops
Potatoes	Carrots
Sugar beet	Bird seed
Peas (threshed and green)	

(1) See DEPARTMENT OF AGRICULTURE FOR SCOTLAND. *Types of Farming in Scotland*. H.M. Stationery Office, Edinburgh. 1952. p. 100. The attempt was made in the East Midlands to calculate the crop requirements of the livestock in order to obtain a better estimate of the acreage of crops for sale. It was found that the variation in crop yields and feeding stuffs purchased made these calculations unreliable.

For livestock, the problem was to translate the various types of livestock into some common denominator. For this purpose the following scale of livestock units was used.

Scale of Livestock Units.

One Livestock Unit equals :—

- 1 Cow or heifer in milk or in calf.
- 1 Bull being used for service.
- 1 "Other cattle"—over 2 years.
- 2 "Other cattle"—1 to 2 years.
- 3 "Other cattle"—under 1 year.
- 5 Sows for breeding.
- 10 All other pigs.
- 6 Rams and ewes for breeding.
- 10 All other sheep.
- 1 Horse.
- 100 Poultry.

Definition of Type Groups.

As already mentioned the first step was to place all the returns in the sample in a full-time, part-time or spare-time group according to the following scale of labour requirements. These were calculated on the basis of the standard figures shown in Table 5.

	Labour hours required
Full-time farms	2,200 or more
Full-time farms with some underemployment	1,800—2,199
Part-time holdings	600—1,799
Spare-time holdings	less than 600

In addition part-time and spare-time holdings were required to have some livestock—26 or more poultry or the equivalent in other livestock. Holdings without stock were included with Other Holdings (see p. 43).

Subdivision of Full-time farms.

After segregating part-time and spare-time holdings, full-time farms were allocated to one or other of the following broad groups.

Specialist farms.
Dairy farms.
Livestock Farms.
Cropping farms.

The basis of classification for each group is set out in more detail in the following pages.

Specialist Farms.

Three types of specialist farms have been identified. No farm was included in a specialist group unless it was estimated that 50 per cent of the total labour required was devoted to the specialist enterprise :—

(a) Poultry Farms.

These are farms on which poultry is the major enterprise, absorbing 50 per cent or more of the total labour required on the holding. Farms were not classified in this group unless there were at least 450 fowls over six months, ducks, geese or turkeys at 4th June or the equivalent of 450 fowls over six months counting two birds under six months as the equivalent of one over six months old.

(b) Pig Farms.

Farms with a minimum of 90 pigs and where the pig enterprise absorbs 50 per cent or more of the total labour required.

For both pig and poultry farms the minimum labour requirements for the specialist enterprise were in effect put at 1,800 hours—the minimum for a full-time farm.

(c) Market Gardens, Fruit Farms and Nurseries.

These are units on which the main interest is the production of vegetables for human consumption, orchard fruit or small fruit⁽¹⁾. Here again the requirement was that 50 per cent or more of the labour required should be for these enterprises. There may be some pigs and poultry and a household cow, but the significance of livestock in the economy of these farms is very limited.

It is, of course, extremely difficult to distinguish between large market gardens and predominantly arable farms. In the East

(1) i.e. Items Nos. 21, 22, 23, and 24 on the 4th June, 1947 Agricultural Return.
For more details of these items see Chapter 12—Market Gardens. pp. 117-118.

Midlands, there are many farms which grow vegetables for human consumption on a field scale especially cabbage, sprouts, savoys, carrots, peas and celery.

It would be wrong to regard these as market gardens in the usual sense. They are not farmed at the same level of intensity—especially as regards the use of labour. For this reason, a farm growing the above crops in blocks of 10 acres or more has not been classified as a market garden unless seven or more workers were employed per 100 acres.

The selection of the above three specialist types on the basis of the labour requirement of the specialist enterprise concerned may be justified on the score that the labour requirement provides an approximate measure both of the size of a business and of the relative importance of the various enterprises within a business. Professor I. G. Davies⁽¹⁾ found from correlation studies that in Eastern Connecticut productive man work units could be used as a common quantitative measure and a classification thus achieved which bears a fairly close quantitative relationship to the sources of gross receipts in the farm business'.

After the specialist farms had been extracted the following breakdown was applied :—

Non-specialist farms with less than 25 per cent of their crops and grass devoted to crops for sale were divided into two groups :—

- (a) Dairy farms.
- (b) Livestock farms.

Dairy Farms—those with less than 25 per cent of their crops and grass acreage devoted to crops for sale and with more than 14 cows (i.e. cows and heifers in milk and cows in calf) per 100 adjusted acres.

The June, 1947 Agricultural Returns do not distinguish between dairy cows and beef cows and the above definition does not, therefore, draw a clear line between 'dairy' farms and 'livestock' farms. All persons who produce milk for sale must be registered under the Milk and Dairies Regulations (S.I.1949 No. 1588) so that their premises may be inspected for cleanliness etc. Inclusion in this register merely indicates that milk may be sold—there is nothing to show how much milk has actually been sold or the importance of milk on the farm in

(1) I. G. DAVIES. *Types of Farming in the Eastern Connecticut Highland.* Storrs Agricultural Experiment Station, Connecticut. August, 1933. Bulletin 191.

question. A list of all farms which could not be classified on other grounds was sent to the Milk Production Officer for the East Midlands. This officer was able to say whether or not each farm was on the register of milk sellers. He was also able, from personal knowledge, to estimate the importance of milk in the economy of many individual farms.

Various other items of circumstantial evidence were used as an aid to the identification of the true dairy farms. For example the presence or absence of milking utensils in the January, 1948 Agricultural Machinery Census form (milking machines, sterilising chests, milk coolers and dairy boilers). The proportion of the various classes of stock was another useful guide. Some farms had a very large number of heifers in calf compared with cows in milk and in calf. Others had a preponderance of male cattle. Both these features can reasonably be regarded as untypical of dairy farms but they are essentially qualitative and not quantitative. It is possible, therefore, that other investigators would attach a different measure of significance to some of these indicators.

Livestock Farms—those with less than 25 per cent of their crops and grass acreage devoted to crops for sale and with less than 14 cows (i.e. cows and heifers in milk and cows in calf) per 100 adjusted acres.

Cropping Farms—The next step was to divide the non-specialist farms with *more* than 25 per cent of their crops and grass devoted to crops for sale into six types:—

- (1) *Cropping with Dairying*—farms with more than 25 per cent of their acreage of crops and grass devoted to crops for sale and with more than 10 cows (i.e. cows and heifers in milk and cows in calf) per 100 adjusted acres. As for Dairy Farms, some evidence was required to show that these cows were used for milk production.
- (2) *Cropping with Pigs or Poultry*—farms with more than 25 per cent of their acreage of crops and grass devoted to crops for sale and with more than 1,000 total poultry or 60 total pigs per 100 adjusted acres and with less than 10 cows used for milk production per 100 adjusted acres. Farms with the required number of pigs *and* poultry were allocated to the Cropping with Pigs or the Cropping with Poultry Group according to which enterprise required most labour.

Farms with more than 1,000 poultry or 60 pigs per 100 acres and 10 or more cows per 100 acres were allocated on the basis of estimated labour requirements. If the estimated labour requirement was greater for cows than for pigs or poultry the farm was placed in the Cropping with Dairying Group and vice versa.

The remainder were then grouped as follows :—

- (3) *Predominantly Arable*—farms with 50 per cent or more of their total acreage of crops and grass devoted to crops for sale and with less than 20 livestock units per 100 acres.
- (4) *Predominantly Arable with Some Livestock*—farms with 50 per cent or more of their total acreage of crops and grass devoted to crops for sale and with more than 20 livestock units per 100 acres.
- (5) *Cropping with Livestock of Some Importance*—farms with more than 25 per cent but less than 50 per cent of their acreage of crops and grass devoted to crops for sale and with less than 25 livestock units per 100 acres.
- (6) *Cropping with Livestock of Considerable Importance*—farms with more than 25 per cent but less than 50 per cent of their acreage of crops and grass devoted to crops for sale and with more than 25 livestock units per 100 acres.

For many purposes, Groups (3) and (4) and Groups (5) and (6) could be combined. There is some evidence that the cropping and the number of livestock carried on many farms varies slightly from year to year—enough to cause some transfer between Groups (3) and (4), Groups (4) and (5), and Groups (5) and (6).

Other Holdings.

A number of holdings were found which could not be included with farms or with part-time and spare-time holdings. These were of three main types. Firstly, there were holdings consisting entirely of permanent grass and with no stock other than sheep or cattle. These were often parks or golf courses but a few large holdings with considerable numbers of cattle were found. Secondly, there were single fields, without stock or under a single crop. Many of these were clearly odd fields attached to other farms but some were probably used by dealers and others for non-agricultural purposes. About one third of the total number of holdings consisting only of rough

grazings were placed in this category ; the remainder having qualified as part-time or spare-time holdings by virtue of their livestock carry. Thirdly, there were a few large units with some crops and stock. These were nearly all holdings requisitioned for various war-time uses and in process of being prepared for handing back to their owners.

Many of the lines of demarcation adopted for any classification may be rather arbitrary. The lines for this classification were chosen after careful study of accounting data for East Midlands farms. The available data show the proportion of net production⁽¹⁾ derived from each source and, therefore, the extent to which the production of dairy farms consists of milk and milk products, cropping farms of crop sales and so on. The accounting sample was not entirely representative but it provided the best available basis for deciding what lines of demarcation should be adopted.

Summary.

The general procedure for the task of classification may, therefore, be listed briefly as follows.

- (1) Holdings were designated full-time, part-time or spare-time on the basis of the estimated labour requirements of their crops and stock.
- (2) Specialist holdings were segregated.
- (3) Holdings with less than 25 per cent of their crops and grass acreage devoted to sale crops were divided into :—
 - (i) Dairy farms.
 - (ii) Livestock farms.
- (4) From holdings with more than 25 per cent of their crops and grass acreage devoted to sale crops the following two types were removed.
 - (i) Cropping with Dairying.
 - (ii) Cropping with Pigs or Poultry.
- (5) The remaining farms were divided between those with
 - (i) Over 50 per cent of acreage under crops for sale. (Predominantly Arable)
 - and (ii) 25-50 per cent of acreage under crops for sale (Cropping with Livestock).

(1) Net production = Sales plus farm consumption (adjusted for valuation changes)
less purchases of store stock.

- (6) Those in (5-i) were divided into two groups
- (A) less than 20 livestock units per 100 acres
(Predominantly Arable)
- and (B) more than 20 livestock units per 100 acres
(Predominantly Arable with Some Livestock).
- (7) Those in (5-ii) were divided into two groups
- (A) less than 25 livestock units per 100 acres
(Cropping with Livestock of Some Importance)
- and (B) more than 25 Livestock units per 100 acres
(Cropping with Livestock of Considerable Importance).
- (8) Other Holdings. These consist of a residue of holdings which could not be placed in any of the categories listed above.

CHAPTER IV.

THE GENERAL PATTERN OF FARMING IN THE EAST MIDLANDS.

Distribution of holdings into full-time, part-time, spare-time and other.

In this chapter, a brief account will be given of the number of holdings of each type and size and of the distribution of crops, stock and labour among the various types in the East Midlands.

It must be borne in mind that the investigation was very largely based on a sample of holdings. The various totals have, therefore, been obtained by raising the sample figures by the appropriate fraction. No attempt has been made to correct these totals to conform with those shown in the Agricultural Statistics, but in the majority of instances the differences are extremely small (see Appendix I pp. 168-169).

DISTRIBUTION OF HOLDINGS BY TYPE OF HOLDING.

TABLE 6

	Total number of holdings	Percentage of holdings classified as :—				
		Full- time	Part- time	Spare- time	Others	Total
Nottingham	5,317	58	23	11	8	100
Leicester	5,346	65	11	16	8	100
Derby	8,175	61	20	14	5	100
Lindsey	9,324	58	21	11	10	100
Kesteven	3,225	69	13	10	8	100
Rutland	617	68	12	10	10	100
East Midlands	32,004	61	19	12	8	100

Table 6 shows that in 1947, 19,575 or 61 per cent of the holdings in the Province were full-time farms. That is, it was estimated that they had enough crops and stock to give one man (the occupier) a full-time occupation. It is probable that a few of these occupiers had other occupations or sources of income and were able to obtain help with farm tasks from members of the family or from paid workers. The table does not, therefore, provide any real indication of the number of occupiers who would regard themselves as farmers. According to the 1931 Census of Population, 22,254 persons (21,133 male and 1,121 female) in the East Midlands stated that they were farmers and a further 11,176 stated that they were gardeners, nurserymen, seedsmen or florists.

Part-time holdings were those with an estimated labour requirement of between 600 and 1,800 hours per acre. Nineteen per cent or 5,897 were found to be in this category. Because the limits of this group were drawn in this way, it is probable that some holdings were included whose occupiers had no other occupation or source of income. These would almost certainly be few in number and might be farmed either by an occupier who was old or inefficient or by an extremely efficient occupier whose high levels of yield and output could not be allowed for by the standard figures used to estimate the labour requirements of the holding.

Spare-time holdings—those requiring less than 600 hours of manual labour—numbered 3,972 or 12 per cent of the total.

Other holdings made up the remaining eight per cent. These were mainly odd fields or holdings with no stock and no crops other than grass. It is significant that in Derbyshire where an attempt was made to amalgamate these holdings with their parent units, they comprised only five per cent of the total number of holdings.

Although full-time farms accounted for only 61 per cent of the total number of holdings, they included 95 per cent of the crops and grassland within the Province (Table 7). Full-time farms also had the vast majority of the livestock, the workers and the tractors (Table 8). Pigs and poultry were the only livestock found in significant numbers on 'holdings not farms'. Both pigs and poultry can, if necessary, be kept under intensive conditions, requiring very little land, and fed on purchased feeding stuffs. Some of the occupiers may be agricultural contractors since as many as eight per cent of the total number of tractors were found to be on these holdings.

DISTRIBUTION OF CROPS AND GRASS BY TYPE OF HOLDING

TABLE 7.

County	Total acreage of crops and grass	Percentage on each type of holding				
		Full- time	Part- time	Spare- time	Other	Total
Nottingham	394,772	94	3	1	2	100
Leicester	444,038	95	2	—	2	100
Derby	406,045	94	4	—	1	100
Lindsey	817,837	96	2	—	2	100
Kesteven	399,761	97	1	—	2	100
Rutland	83,863	97	1	—	2	100
East Midlands	2,546,316	95	2	1	2	100

**DISTRIBUTION OF CROPS AND LIVESTOCK AND LABOUR BY TYPE OF HOLDING.
EAST MIDLANDS.**

TABLE 8.

Type of crop or stock	Percentage on each type of holding		
	Full-time	All other types	Total
Arable	97	3	100
Permanent grass	92	8	100
Total crops and grass	95	5	100
Cows and heifers	96	4	100
Total cattle	94	6	100
Pigs	85	15	100
Sheep	98	2	100
Horses	95	5	100
Poultry	78	22	100
Total workers	96	4	100
Total tractors	92	8	100

Relationship between type and size of holding.

The close relationship which exists between type and size of holding is demonstrated in Tables 9 and 10. The former shows the distribution of holdings of each type and size by number and the latter shows the proportionate acreage of crops and grass utilised by each type and size of holding. Part-time, spare-time and other holdings were clearly only of importance in the two groups below 25 acres in size. The Other Holdings above this size were mainly summer grazings carrying cattle or sheep, and occasionally a few poultry but without cultivated crops. Many of them were probably detached portions of full-time farms. A few were holdings requisitioned for various war-time uses.

RELATIONSHIP BETWEEN SIZE AND TYPE OF HOLDING.
TABLE 9. (In terms of Numbers)

Size group—adjusted acres	Total no. of holdings	Percentage of each type of holding				
		Full-time	Part-time	Spare-time	Other	Total
1. 1—4.9	6,116	6	32	45	17	100
2. 5—24.9	8,036	27	44	15	14	100
3. 25—99.9	9,719	92	4	—	4	100
4. 100—299.9	6,530	99	—	—	1	100
5. 300—699.9	1,413	100	—	—	—	100
6. 700 and over	190	99	—	—	1	100
East Midlands	32,004	61	19	12	8	100

RELATIONSHIP BETWEEN SIZE AND TYPE OF HOLDING.
TABLE 10. (In terms of Acreage)

Size group—adjusted acres	Total acreage of crops and grass	Percentage of acreage on each type of holding				
		Full-time	Part-time	Spare-time	Other	Total
1. 1—4.9	15,005	6	37	44	13	100
2. 5—24.9	96,264	36	41	11	12	100
3. 25—99.9	542,284	95	2	—	3	100
4. 100—299.9	1,103,857	99	—	—	1	100
5. 300—699.9	581,403	100	—	—	—	100
6. 700 and over	207,503	98	—	—	2	100
East Midlands	2,546,316	95	2	1	2	100

It is apparent from Table 11 that the average size of all types of holdings varies considerably in the various counties of the East Midlands. In terms of crops and grass, those in Derbyshire are by far the smallest and those in Kesteven and Rutland the largest. The averages for all holdings shown in the last column of the table are of the type usually found in the published Agricultural Statistics; they are misleading because they provide no indication of the significant difference in size between full-time and all other holdings.

Nearly 80 per cent of the rough grazings in the Province are in Derbyshire and it is only in that county that the addition of rough grazings makes an appreciable difference to farm size. On average full-time farms in Derbyshire had 17 acres of rough grazings compared with two or three in all the other counties. Rough grazings are not, of course, spread evenly among all kinds of full-time farms but are largely found associated with livestock farms.

AVERAGE SIZE OF FULL-TIME, PART-TIME, SPARE-TIME AND OTHER HOLDINGS.

TABLE 11.

County	Acres of crops and grass				
	Full-time	Part-time	Spare-time	Other	All holdings
Nottingham	121	9	4	23	74
Leicester	120	18	5	25	83
Derby	76	11	5	10	50
Lindsey	146	7	4	17	88
Kesteven	176	8	4	23	124
Rutland	192	19	6	26	136
East Midlands	124	10	4	19	80

Distribution of farms by type of farming.

After the full-time farms had been segregated from other holdings, each one was placed in one of 11 Type of Farm groups in accordance with the definitions shown in Chapter III. These groups are intended to include all those farms with the same general problems of organisation and management, or in other words, those that are likely to be affected in the same way by any given change in economic conditions. Whether or not this intention has been fulfilled can only be judged by a detailed study of each individual type. The following tables and paragraphs have been included to provide some indication of the relative importance and location of each type of farm. It is essential to bear in mind that the tables are based mainly on raised sample figures, and that there is a tendency for such sample figures to be inaccurate in exceptional cases. It is difficult to accept the conclusion that there was, in 1947, *not one* specialist pig farmer in the Province. On the other hand, the fact that not one such farmer

chanced to be included in the sample as drawn can be accepted as a very clear indication that the actual number of such farmers in the Province is negligible. It is known that many tenants on Land Settlement Association Estates rely to a considerable extent on pig and poultry production. Many tenants' holdings comprising each estate of the Association are bulked together in one Agricultural Return.

Table 12 shows how the 19,575 full-time farms in the Province are distributed among the various Type of Farming groups in each county. The percentage distribution figures in Table 13 show that Dairy farms (Group 1) are the most numerous and account for 33 per cent of the total. In Derbyshire three farms out of every four fell into this category.

The next six groups have a strong interest in the production of crops for sale as a common feature. All the 49 per cent of farms in these groups devote more than 25 per cent of their crops and grass area to the production of wheat, barley, potatoes, sugar beet and other crops which are normally grown for sale. In Lindsey, 79 per cent and in Kesteven 85 per cent of all full-time farms were in one of these six cropping groups.

NUMBERS OF FULL-TIME FARMS OF EACH TYPE IN EACH COUNTY AND NUMBER
WITH UNDEREMPLOYMENT.

TABLE 12.

Type of farm	Nott- tingham	Leic- ester	Derby	Lindsey	Kesteven	Rut- land	East Midlands	
							Total	Under- employ- ment (1)
1. Dairy	574	1,597	3,784	329	128	24	6,436	174
2. Cropping with dairying important	492	386	218	637	326	11	2,070	20
3A. Cropping with pigs	34	—	—	2	4	—	40	—
3B. Cropping with poultry	4	10	24	10	—	1	71	61
4. Predominantly arable	266	52	48	1,161	796	54	2,377	61
5. Predominantly arable with some livestock	148	29	20	439	216	20	872	60
6. Cropping with livestock of some importance	444	188	48	1,388	306	81	2,455	41
7. Cropping with livestock of considerable importance	469	233	64	615	214	70	1,665	61
8. Livestock	415	699	419	585	112	149	2,379	381
9. Poultry	60	60	110	70	20	5	325	40
10. Market garden	160	242	264	142	72	5	885	20
11. Pigs	—	—	—	—	—	—	—	—
All full-time farms	3,066	3,496	4,999	5,378	2,216	420	19,575	858
Holdings with under-employment	150	90	270	300	30	18	858	—

(1) Included in full-time farms.

Farms with livestock (Group 8) other than dairy cows, were important in Leicestershire and Rutland where most of the famous Midland Grazing pastures are to be found. Poultry farms and Market Gardens represent only a small fraction of full-time farms—they are of considerably more significance in the Counties of Nottingham, Leicester and Derby than in the other three counties of the Province.

DISTRIBUTION OF FULL-TIME FARMS OF EACH TYPE WITHIN COUNTIES.

TABLE 13.

Type of farm	Nott-ingham	Leic-ester	Derby	Lindsey	Kest-even	Rut-land	East Midlands
1. Dairy	19	46	76	6	6	6	33
2. Cropping with dairying important	16	11	4	12	15	3	10
3A. Cropping with pigs	1	—	—	—	1	—	—
3B. Cropping with poultry	—	—	1	—	—	—	—
4. Predominantly arable	9	1	1	22	36	13	12
5. Predominantly arable with some livestock	5	1	—	8	10	5	4
6. Cropping with livestock of some importance	14	5	1	26	14	19	13
7. Cropping with livestock of considerable importance	15	7	1	11	9	17	9
8. Livestock	14	20	9	11	5	35	12
9. Poultry	2	2	2	1	1	1	2
10. Market garden	5	7	5	3	3	—	4
11. Pigs	—	—	—	—	—	—	—
All full-time farms	100	100	100	100	100	100	100

The last column of Table 12 shows the number of farms of each type classified as "full-time but with underemployment". These are the holdings where the estimated labour requirement of the crops and stock was between 1,800 and 2,200 hours per annum. They have been included in all tabulations as full-time farms but as the standard labour requirements used (see Chapter III) were probably rather generous, it is extremely doubtful whether these holdings are large enough to provide an able bodied man with a full-time occupation. By far the biggest proportion of these border line holdings were found in the Livestock farms (Group 8) in the counties of Derby and Lindsey.

Eighty-four per cent of all the Dairy farms in the Province are in the two counties of Leicester and Derby (Table 14). Lindsey and Kesteven have the bulk of the Predominantly Arable and Cropping with Livestock farms. Cropping with Dairying (Group 2) and Livestock farms (Group 8) are spread over the Province roughly in proportion to the total number of full-time farms in each county. On the other hand in terms of the total number of holdings within each county, Derbyshire has more than a proportionate number of Poultry farms and Leicestershire more than its share of Market Gardens.

DISTRIBUTION OF FULL-TIME FARMS OF EACH TYPE BETWEEN COUNTIES.

TABLE 14.

Type of farm	Nott-ingham	Leic-ester	Derby	Lindsey	Kest-even	Rut-land	East Midlands
1. Dairy	9	25	59	5	2	—	100
2. Cropping with dairying important	24	19	10	31	16	—	100
3A. Cropping with pigs	85	—	—	5	10	—	100
3B. Cropping with poultry	6	14	34	14	31	1	100
4. Predominantly arable	11	2	2	49	34	2	100
5. Predominantly arable with some livestock	17	3	2	51	25	2	100
6. Cropping with livestock of some importance	18	8	2	57	12	3	100
7. Cropping with livestock of considerable importance	28	14	4	37	13	4	100
8. Livestock	17	29	18	25	5	6	100
9. Poultry	18	18	34	22	6	2	100
10. Market garden	18	27	30	16	8	1	100
11. Pigs	—	—	—	—	—	—	100
All full-time farms	16	18	26	27	11	2	100

Relationship between type and size of farm.

It is clear from Table 15 that farms of the same type vary considerably in size from one county to another, for reasons that are not readily apparent. There is also some evidence in the table to show that there may be a tendency for the degree of specialisation to fall as the size of holding increases. Holdings dependent on a single product or upon closely related groups of products seem smaller than those with a more diversified type of production. Specialised production is often associated with intensive use of land, especially on Market Garden or Poultry farms.

Apart from the small group of Cropping with Pigs or Poultry farms, the various types fell roughly into the following ascending order as regards size :—

- Poultry farms.
- Market Gardens.
- Dairy farms.
- Cropping with Dairying important and Livestock farms.
- Predominantly Arable farms.
- Cropping with Livestock farms.

On nearly all types of farm, size or volume of business may be influenced by the quantity of raw materials such as feed and fertilisers brought on to the farm. If a correction for this were possible, the differences in size would probably be less apparent. It is only in Derbyshire that rough grazings make an appreciable difference to

farm size and even in this county it was only the average size of dairy and livestock farms that were affected. On average in Derbyshire the Dairy farms each had about eight acres of rough grazing and the Livestock farms an average of 132 acres. Much of this was probably mountain and heath and not the rough grazing often found at low altitudes.

AVERAGE SIZE OF FULL-TIME FARMS OF EACH TYPE IN EACH COUNTY.
TABLE 15.

Type of farm	Nott- ingham	Leic- ester	Derby	Lindsey	Kest- even	Rut- land	Acres of crops and grass East Midlands
I. Dairy	93	106	81	64	43	70	87
2. Cropping with dairying important	116	136	106	91	105	121	109
3A. Cropping with pigs	46	—	—	474	141	—	77
3B. Cropping with poultry	139	59	34	53	92	3	64
4. Predominantly arable	125	142	74	185	211	240	185
5. Predominantly arable with some livestock	96	262	17	118	167	250	132
6. Cropping with livestock of some importance	196	182	135	200	282	282	210
7. Cropping with livestock of considerable importance	152	192	119	162	180	219	167
8. Livestock	117	141	61	94	143	144	111
9. Poultry	8	18	9	7	9	13	10
10. Market garden	29	14	15	36	23	33	22
11. Pigs	—	—	—	—	—	—	—
All full-time farms	121	120	76	146	176	192	124

Distribution of land, stock, labour and tractor.

The proportion of the total crops and grass found on each type of farm is determined by the number of farms of each type and by their average size. These two factors also influence the proportion of particular crops or groups of crops found within each type group, but the system of farming is the predominant factor. One would expect to find the bulk of wheat, barley, potatoes and sugar beet on Predominantly Arable and Cropping with Livestock farms but it is perhaps surprising that 47 per cent of the acreage of fruits, vegetables for human consumption and flowers was on Predominantly Arable farms and only 10 per cent on Market Gardens.

It will be shown later that the essential difference is the Market Gardens are almost entirely devoted to such crops while the Predominantly Arable farms devote only about one tenth of their land to these crops.

The figures in Table 16 illustrate very clearly the comparative insignificance in terms of land use, of the Cropping with Pigs or Poultry, the Poultry and the Market Gardens Group.

PROPORTION OF CROPS AND GRASS AND OF CERTAIN CROPS ON EACH TYPE
OF FARM.

TABLE 16.

East Midlands

Type of farm	Crops and grass	Temporary grass	Total tillage	Wheat and barley	Potatoes and sugar beet	Fruit, vegetables and flowers	Oats and other crops
1. Dairy	22	22	13	9	7	2	25
2. Cropping with dairying important	9	10	9	10	7	7	10
3A. Cropping with pigs	†	†	†	†	†	†	†
3B. Cropping with poultry	†	†	†	†	†	†	†
4. Predominantly arable	17	15	27	27	41	39	14
5. Predominantly arable with some livestock	5	4	6	7	9	8	3
6. Cropping with livestock of some importance	20	23	23	26	18	19	24
7. Cropping with livestock of considerable importance	11	12	11	12	9	9	10
8. Livestock	10	11	7	6	3	2	11
9. Poultry	†	†	†	†	†	†	†
10. Market garden	†	†	1	†	—	10	—
11. Pigs	—	—	—	—	—	—	—
All full-time farms	95	97	97	97	97	96	97
All other holdings	5	3	3	3	3	4	3
All holdings	100	100	100	100	100	100	100

† Less than 0.5 per cent.

Table 17 shows how the livestock population of the Province was divided among the various types of farms. Unfortunately there is no way of gauging the effect of the changes which have occurred since 1947 on the pattern of distribution shown in the table. Over the intervening years, the pig population has more than doubled and there have been significant increases in numbers of poultry, sheep and cattle. For some purposes it might be important to know the type and size of farm on which these changes have been taking place. But several of the points arising from the table are not likely to have been altered by these population changes.

PROPORTION OF CERTAIN CLASSES OF LIVESTOCK ON EACH TYPE OF FARM.
TABLE 17.

East Midlands

Type of farm	Cows and heifers in milk and in calf	Other cattle over two years old	Total cattle	Total pigs	Total sheep	Total poultry
1. Dairy	51	13	36	14	11	19
2. Cropping with dairying important	14	4	10	7	4	8
3A. Cropping with pigs	†	†	†	8	—	†
3B. Cropping with poultry	†	†	†	1	†	3
4. Predominantly arable	4	9	6	14	8	6
5. Predominantly arable with some livestock	2	6	4	7	5	5
6. Cropping with livestock of some importance	9	14	12	12	25	9
7. Cropping with livestock of considerable importance	7	20	12	9	22	7
8. Livestock	9	23	14	7	23	8
9. Poultry	†	†	†	2	†	11
10. Market garden	†	†	†	4	†	2
11. Pigs	—	—	—	—	—	—
All full-time farms	96	89	94	85	98	78
All other holdings	4	11	6	15	2	22
All holdings	100	100	100	100	100	100

—nil.

† less than 0.5 per cent.

It is clear that full-time farms have the bulk of all classes of livestock but Other Holdings have a significant proportion of other cattle over two years and of pigs and poultry. The cattle are mainly those carried on summer grazings. On full-time farms the bulk of the cows and heifers in milk and in calf were on the Dairy and Cropping with Dairying farms. Other cattle over two years of age were mainly on the Cropping with Livestock and Livestock farms but down calving heifers on Dairy farms made up quite a few of the total. Pigs were well distributed over all types of farms—Predominantly Arable farms (Groups 4 and 5) were the only ones with a more than proportionate carry of pigs. Sheep were concentrated on Cropping with Livestock and Livestock farms. Only 11 per cent of total poultry were on specialist Poultry farms but Dairy Farms had 19 per cent of the total and Other Holdings 22 per cent.

DISTRIBUTION OF LABOUR, HORSES AND TRACTORS AMONG FARMS OF EACH TYPE.
(PER CENT).

TABLE 18.

Type of farm	Workers employed			Total man work units	Work horses	All tractors	East	Midlands
	Regular	Casual & others	Total					
I. Dairy	20	16	19	23	29	19		
2. Cropping with dairying	9	9	9	10	10	11		
3A. Cropping with pigs	†	†	†	†	†	†		
3B. Cropping with poultry	†	†	†	†	†	†		
4. Predominantly arable	23	26	24	19	15	19		
5. Predominantly arable with livestock of some importance	6	6	6	5	5	6		
6. Cropping with livestock of some importance	17	16	16	17	16	17		
7. Cropping with livestock of considerable importance	10	8	9	10	10	9		
8. Livestock	7	8	7	8	9	7		
9. Poultry	†	†	1	1	†	†		
10. Market garden	5	6	5	2	—	4		
11. Pigs	—	—	—	—	—	—		
All full-time farms	97	95	96	95	95	92		
All other holdings	3	5	4	5	5	8		
All holdings	100	100	100	100	100	100		

† less than 0.5 per cent.

The labour resources of the Province at the time of the study (1947-48) were divided among the various types of farm as shown in Table 18. Since then considerable changes in the total supply of man, horse and tractor labour have occurred in the East Midlands. Between 1947 and 1953 the total number of workers decreased by 10,998 or 15 per cent. This decline was almost entirely among regular workers. Horse numbers fell by 23,631 or 57 per cent between these two dates but in January, 1952 when the last census was taken tractor numbers were 8,300 or 34 per cent greater than in January, 1948. These are extreme changes but without an up-to-date classification there is no means of determining whether these changes affected all farms equally or were confined to a few types or sizes.

On average, each full time farm in June, 1947 employed 2.5 regular and 1.1 casual workers or a total of 3.6, but the number varied with the type of farm. Groups 3A, 4, 5, 6, 7 and 10 employed more than this number. Per 100 acres of crops and grass, the average number employed (other than the occupier and his wife) was 2.9 but the intensity of employment varied from 2.0 men per 100 acres on Livestock farms (Group 8) to 20.3 on Market Gardens.

The estimated total labour requirements for the Province have been calculated (using the standards shown in Chapter III page 38) and the fourth column of Table 18 shows the proportionate labour requirement of the crops and stock on each type of farm. It will be seen that the distribution is very similar to that shown for total workers employed in the preceding column. The differences that do in fact occur suggest that the labour requirements for dairy cows have been set too high and for vegetables for human consumption and fruit too low. It may also be a reflection of the importance of the manual labour contribution of the farmer and his wife.

A rather different aspect of the picture is shown in Table 19. Slightly more than one half of the total number of holdings were without any regular workers in June, 1947 and even among full-time farms there were nearly 25 per cent with no regular workers. At the other extreme 600 holdings had 11 or more regular workers. The number of part-time, spare-time and other holdings with several workers may seem high but the majority of these were contractors or gang masters and the workers would be employed almost entirely on other holdings as casual workers for planting, harvesting or threshing.

NUMBER OF FULL-TIME, PART-TIME, SPARE-TIME AND OTHER HOLDINGS EMPLOYING
REGULAR WORKERS.

TABLE 19.

East Midlands

Number of regular workers per holding	Full-time	Part-time	Spare-time	Other	Total
0	5,003	5,504	3,786	2,446	16,739
1	4,827	298	105	71	5,301
2	3,719	64	40	6	3,829
3	2,091	—	21	—	2,113
4	1,253	10	—	24	1,287
5	652	—	—	—	653
6	560	20	—	—	580
7	385	—	—	—	385
8	216	—	—	—	216
9	172	—	—	1	173
10	128	—	—	—	128
11 and over	569	—	20	11	600
Total	19,575	5,897	3,972	2,560	32,004

Table 20 shows the number of holdings without tractors and with one or more. One or two wheeled tractors have been ignored for the purposes of this table. Sixty per cent of all holdings and about

38 per cent of full-time farms were without tractors but very few farms had more than three tractors.

NUMBER OF FULL-TIME, PART-TIME, SPARE-TIME AND OTHER HOLDINGS WITH TRACTORS
(EXCLUDING 1 AND 2 WHEELED TRACTORS).

TABLE 20.

East Midlands

Number of tractors per holding	Full-time	Part-time	Spare-time	Other	Total
0	7,477	5,327	3,827	2,473	19,104
1	7,213	549	45	85	7,892
2	3,107	21	60	—	3,188
3	1,079	—	20	2	1,101
4	397	—	—	—	397
5	147	—	—	—	147
6	47	—	20	—	67
7 and over	108	—	—	—	108
Total	19,575	5,897	3,972	2,560	32,004

Relative importance of crops and stock.

If details were available of production or sources of income for the farms in the sample used for this classification, these would show the relative importance of crops and stock in the economy of each type of farm. In the absence of such data it is worth trying to estimate how much of the total farm labour is absorbed by crops and livestock. This has been done by applying the standard labour requirements set out in Chapter III to the total acreage of crops and numbers of livestock in each group in the Province. The results of this calculation are shown in Table 21. There is clearly a very striking difference between the various groups—between Poultry farms, for instance, with only one per cent of labour devoted to sale crops and Market Gardens with 82 per cent. Sale crops were taken to be wheat, barley, potatoes, sugar beet, vegetables for human consumption, fruit and flowers.

ESTIMATED ALLOCATION OF LABOUR BETWEEN SALE CROPS, FEED CROPS,
AND LIVESTOCK.

TABLE 21.

Per cent

Type of farm	Man work units required for				
	Sale crops	Feed crops	Live-stock	Livestock and feed crops	All crops and stock
1. Dairy	8	24	68	92	100
2. Cropping with dairying	31	22	47	69	100
3A. Cropping with pigs	39	13	48	61	100
3B. Cropping with poultry	21	10	69	79	100
4. Predominantly arable	73	15	12	27	100
5. Predominantly arable with livestock of some importance	58	13	29	42	100
6. Cropping with livestock of some importance	41	33	26	5	100
7. Cropping with livestock of considerable importance	36	25	39	64	100
8. Livestock	14	32	54	86	100
9. Poultry	1	4	95	99	100
10. Market garden	82	6	12	18	100
11. Pigs	—	—	—	—	—
All full-time farms	37	23	40	63	100
All other holdings	21	16	83	79	100
All holdings	36	23	41	64	100

To what extent is it possible to say that the labour devoted to various enterprises is proportionate to the net production of such enterprises? At least one American attempt at farm classification was based on the proportion of man work units devoted to each enterprise.⁽¹⁾ Table 22 shows for the farms in the East Midlands Farm Management Survey sample the proportion of net farm production in value terms derived from crops and from livestock and livestock products. It will be seen that these proportions agree to a considerable extent with those relating to estimated labour use in Table 21. Part of the difference is due to the fact that the Farm Management Survey sample is not representative of the universe. Another explanation is that for the purpose of Table 21 wheat and barley were regarded as sale crops and oats as a feed crop. In actual practice it is probable that on many livestock farms wheat and barley are partly fed on the farm and on many arable farms, part of the oat crop is sold.

PROPORTION OF NET PRODUCTION⁽¹⁾ DERIVED FROM CROPS AND LIVESTOCK
(INCLUDING LIVESTOCK PRODUCTS)

TABLE 22.

Type of farm	Percentage of net production from		
	Crops	Livestock and livestock products	Total
1. Dairy	4	96	100
2. Cropping with dairying	38	62	100
3. Cropping with pigs or poultry	41	59	100
4. Predominantly arable	80	20	100
5. Predominantly arable with livestock of some importance	75	25	100
6. Cropping with livestock of some importance	61	39	100
7. Cropping with livestock of considerable importance	52	48	100
8. Livestock	25	75	100

(1) Sales, minus purchases of store livestock, adjusted for valuation changes.

SOURCE : Farm Management Survey, East Midlands, 1952-53.

These comparisons suggest that the allocation of labour is a reasonable indication of the source of farm income and also that the classification of farms in the manner described in Chapter III does bring together farms which accounting surveys show to be similar in many important ways.

(1) I. G. DAVIES. *Types of Farming in the Eastern Connecticut Highland*. Storr's Agricultural Experiment Station, Connecticut, August, 1923. Bulletin 191.

CHAPTER V.

GROUP 1. DAIRY FARMS.

Size Distribution.

On March 31st, 1947, there were 13,070 milk producers registered with the Milk Marketing Board in the East Midlands. This was rather more than double the total number classified as Dairy farms on the basis of the June 1947 Agricultural Returns. It is, of course, quite natural that there should be many more registered producers than Dairy farmers since all producers who wish to sell milk must be registered with the Board.

Table 23 shows the number of Dairy farms of each size in each county of the East Midlands at June, 1947. More than half the total were in Derbyshire and nearly one quarter in Leicestershire.

DAIRY FARMS IN EACH COUNTY IN EACH SIZE GROUP.

TABLE 23.

Size group—adjusted acres	Nott-ingham	Leic-ester	Derby	Lindsey	Kest-even	Rut-land	Numbers East Midlands
1. 1—4.9	—	—	—	—	—	—	—
2. 5—24.9	20	120	280	100	40	3	563
3. 25—49.9	120	320	1,170	90	50	5	1,755
50—74.9	130	290	780	60	20	5	1,285
75—99.9	130	200	500	30	10	6	876
4. 100—149.9	100	300	560	24	8	5	997
150—199.9	36	160	292	8	—	—	496
200—249.9	24	124	108	8	—	—	264
250—299.9	—	48	48	4	—	—	100
5. 300—699.9	14	34	46	4	—	—	98
6. 700 and over	—	1	—	1	—	—	2
All sizes	574	1,597	3,784	329	128	24	6,436
Average size—acres of crops and grass	93	106	81	64	43	70	87

The size distribution shows that 61 per cent of the farms were between 25 and 100 acres in size and that nearly one half of these, or 27 per cent of the total were in fact between 25 and 50 acres in size. In Derbyshire, there was a particularly heavy concentration of farms between 25 and 50 acres in size. Table 24 emphasises the importance of the 25 to 100 acres group and shows that 39 per cent of the land and 43 per cent of the cows are within this size range.

Two farms of over 700 acres were judged to be Dairy farms, but both were in many ways exceptional and no further description

PERCENTAGE OF DAIRY FARMS, CROPS AND GRASS, AND COWS IN EACH SIZE GROUP.

TABLE 24.

East Midlands

Size group—adjusted acres	Percentage within each group		
	Farms	Crops and Grass	Cows and heifers
Under 4.9	—	—	—
5—24.9	9	2	4
25—99.9	61	39	43
100—299.9	29	52	47
300—699.9	1	6	5
700 and over	*	1	1
	100	100	100

* Less than 0.5 per cent.

would be possible without betraying the confidential character of the Agricultural Returns. They have, therefore, been omitted from many of the following tables, but not from the East Midlands averages.

Employment of labour.

The small average size of the Dairy farms in the Province has already been demonstrated by the numbers falling into each acreage size group. This feature is also revealed by Table 25 which gives the number of farms employing various numbers of regular workers. Many of these were undoubtedly members of the farmer's own family (other than his wife) but the Agricultural Returns do not distinguish between hired and family workers. It would be most useful if they occasionally did so.

Of these Dairy farms, 28 per cent were without any regular workers other than the occupier and his wife, 31 per cent had one worker and 21 per cent had two workers. Only 20 per cent of all

NUMBER AND PERCENTAGE OF DAIRY FARMS WITH VARIOUS NUMBERS OF REGULAR WORKERS.

TABLE 25.

Number of regular workers per farm	Size of Farm—Adjusted Acres						East Midlands			
	5—24.9		25—99.9		100—299.9					
	No.	%	No.	%	No.	%	No.	%	No.	
0.	382	68	1,274	32	93	5	—	—	1,749	28
1.	161	29	1,587	41	249	14	2	2	1,999	31
2.	20	3	823	21	517	28	—	—	1,360	21
3.	—	—	171	4	473	26	4	4	648	10
4.	—	—	61	2	305	16	12	12	378	6
5.	—	—	—	—	104	6	18	19	122	2
6.	—	—	—	—	80	4	14	15	94	1
7.	—	—	—	—	8	—	14	14	22	—
8.	—	—	—	—	20	1	8	8	28	1
9.	—	—	—	—	4	—	2	2	6	—
10.	—	—	—	—	4	—	10	10	14	—
11 or more	—	—	—	—	—	—	14	14	16	—
Total	563	100	3,916	100	1,857	100	98	100	6,436	100

Dairy farms had three or more regular workers. The three smallest size groups in Table 25 showed modes at 0, 1 and 2 regular workers respectively, but farms between 300 and 700 acres were spread very evenly among the groups with four or more workers.

Table 26⁽¹⁾ shows the employment of workers, other than the farmer and his wife, per 100 acres of crops and grass. The most remarkable feature is the comparative uniformity of the figures for the different size groups. This uniformity would, of course, disappear if allowance could be made for the manual labour contribution of the farmer and his wife. The farmer on the small farm spends nearly all his time doing manual work and the bigger the farm the less the manual work the farmer is likely to do. If it is assumed, for purposes of illustration, that the farmer and his wife are equivalent to another manual worker, the intensity of labour use per 100 acres varies from 7.7 on farms under 25 acres to 2.9 on farms in the 300 to 700 acres group. The average for all Dairy farms would be 3.6 workers per 100 acres. The true figure would almost certainly be lower for the large farms. Taking all Dairy farms together it can be said that the acreage of crops and grass is about 40 per worker and possibly 30 per worker if the manual labour of farmers and their wives is allowed for.

TABLE 26. NUMBERS OF WORKERS ON DAIRY FARMS OF EACH SIZE.

Type of labour	Size of farm—adjusted acres				Per 100 acres. East Midlands
	5— 24.9	25— 99.9	100— 299.9	300— 699.9	
Regular —male	1.8	1.6	1.7	1.8	1.7
—female	0.2	0.2	0.1	0.1	0.1
—Total	2.0	1.8	1.8	1.9	1.8
Casual —male	—	0.4	0.2	0.2	0.3
—female	0.2	0.1	0.0	0.1	0.1
Other(1)	—	0.3	0.4	0.4	0.3
Total casual and other	0.2	0.8	0.6	0.7	0.7
All 'hired' workers	2.2	2.6	2.4	2.6	2.5
Persons available(2)	7.7	4.4	3.0	2.9	3.6
Total 'hired' workers per farm	0.4	1.5	3.7	9.6	2.2

(1) Women's Land Army and Prisoners of War.

(2) Including allowance for manual work of farmer and wife.

Casual labour is not of great importance. On farms below 25 acres in size only about nine per cent of the total labour employed was casual. On the other groups casual labour varied from 25 to

(1) The number of casual workers at June has been taken to represent the regular equivalent of casuals employed throughout the year. On average over the three years 1950, 1951 and 1952 the total number of casual workers at June was slightly lower than the average of the four quarterly censuses in England and Wales.

30 per cent of the total employed. Even these figures may be slightly exaggerated because the item 'other' workers, includes members of the Women's Land Army and Prisoners of War, many of whom worked regularly on individual holdings. It also seems from the table that the importance of female labour diminishes as the size of farm increases.

Although numbers employed per 100 acres were remarkably constant, the figure of total workers per holding in the last line of Table 26 shows the very considerable variation in the size of the labour team. Only about one farm out of three below 25 acres employed labour, but in the group between 300 and 700 acres, the average was nearly 10 men. Thirty per cent of Dairy farms were above 100 acres in size and these employed 57 per cent of the 'hired' workers.

Land Utilisation.

The pattern of land utilisation on Dairy farms is determined very largely by the need to provide as much feed as possible for the livestock carried. On average nearly 90 per cent of the land is under grass or feed crops. But the pattern varies with the size of farm as may be seen from Table 27. As farm size increases, the proportion of land under permanent grass falls and there is a corresponding rise

TABLE 27. LAND UTILISATION ON DAIRY FARMS OF EACH SIZE. Per 100 acres

Crop	Size of farm—adjusted acres				East Midlands
	5— 24.9	25— 99.9	100— 299.9	300— 699.9	
Wheat	0.4	6.1	8.0	8.2	7.2
Barley	1.0	1.1	1.5	2.3	1.4
Oats	4.2	8.8	9.1	8.9	8.9
Potatoes	1.9	1.9	2.1	2.4	2.0
Sugar Beet	0.5	0.4	0.6	0.8	0.6
Fruit, vegetables and flowers	0.8	0.2	0.3	0.3	0.3
Other crops	8.6	9.1	9.6	10.1	9.4
Total tillage	17.4	27.6	31.2	33.0	29.8
Temporary grass	7.2	10.1	12.9	13.2	11.8
Total arable	24.6	37.7	44.1	46.2	41.6
Permanent grass	75.4	62.3	55.9	53.8	58.4
Total crops and grass	100.0	100.0	100.0	100.0	100.0
Average size (acres)—crops and grass	18.0	55.3	156.2	365.6	86.6
—rough grazing	0.3	4.5	6.9	17.4	5.0

in the proportion of land under arable crops, including temporary grass. The apportionment of the arable land between tillage and temporary grass was almost constant; roughly 29 per cent of the arable being under temporary grass in all size groups. On average there was little rough grazing on these Dairy farms.

For the purposes of this classification, wheat, barley, sugar beet, potatoes and vegetables have been regarded as sale crops. In practice, on many farms, these crops may be grown in part for livestock feeding, but not to an extent likely to upset the general conclusion that about nine tenths of the land is devoted to feeding the stock. This raises the question of the degree of self-sufficiency that is in fact achieved on farms of various sizes. To what extent are they able to feed their livestock on the produce of their own land? This point is discussed in more detail below (p. 67 et seq.).

Livestock Carry.

The small size of the majority of the Dairy farms in the Province is emphasised by the figures of the number of farms with herds of various sizes given in Table 28. Most of the farms under 25 acres in size had between 5 and 10 cows. The most common size of herd on farms of between 25 and 100 acres was between 10 and 15 cows in milk or in calf. For farms of 100 to 300 acres, the most usual herd size lay between 30 and 40 cows, but quite a substantial number had 60 or more cows.

NUMBERS AND PERCENTAGE OF DAIRY FARMS OF EACH SIZE WITH VARIOUS NUMBERS OF COWS.
TABLE 28.

Number of cows and heifers in milk, and cows in calf	Size of farm—adjusted acres										East Midlands	
	5—24.9		25—99.9		100—299.9		300—699.9		700 and over			
	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
Under 5	—	—	—	—	—	—	—	—	—	—	—	—
5—9	362	64	583	15	—	—	—	—	—	—	945	14
10—14	141	25	1,387	35	8	†	—	—	—	—	1,536	24
15—19	40	7	825	21	97	5	—	—	—	—	962	15
20—24	20	4	650	17	222	12	—	—	—	—	892	14
25—29	—	—	270	7	273	15	—	—	—	—	543	8
30—39	—	—	131	3	489	26	6	6	—	—	626	10
40—49	—	—	70	2	372	20	4	4	—	—	446	7
50—59	—	—	—	—	272	15	24	25	—	—	296	5
60 and over	—	—	—	—	124	7	64	65	2	100	190	3
Total	563	100	3,916	100	1,857	100	98	100	2	100	6,436	100

† less than 0.5 per cent.

The average size of herd was 23 cows, but 53 per cent of all farms had less than 20 cows each. The average size of herds included in the milk recording schemes of the Milk Marketing Board in the East Midlands in 1950 was estimated to be 25 cows.

There is great variation between farms of different sizes in the type of livestock carried. The proportion of cattle other than cows and the number of pigs, sheep and poultry carried per 100 acres are by no means constant. This is shown clearly in Table 29. The

high intensity of stocking on farms of less than 25 acres stands out—one livestock unit per 1.4 acres compared with one per 2.2 acres in the next group. Sheep were the only livestock of which the larger farms had more per 100 acres but it is not clear why breeding sheep were a lower proportion of total sheep on these farms. The figure of 4.2 horses per 100 acres on farms of less than 25 acres suggests that roughly three quarters of these farms kept one horse for carting and various other jobs.

TABLE 29. LIVESTOCK CARRY ON DAIRY FARMS OF EACH SIZE. Per 100 acres

Type of stock	Size of farm—adjusted acres				East Midlands
	5—24.9	25—99.9	100—299.9	300—699.9	
Cows and Heifers in milk	41.6	20.9	16.2	12.6	18.2
Cows in calf, but not in milk	7.1	4.8	3.5	3.2	4.0
Heifers in calf, with first calf	3.8	4.0	4.6	5.6	4.5
Bulls	1.2	1.3	1.0	0.9	1.2
Other cattle :—					
2 years old and over M(1)	—	0.2	0.3	0.3	0.2
F	2.4	2.6	3.6	4.2	3.2
1 year old and under 2 M	0.2	0.2	0.3	0.5	0.3
F	3.0	5.3	5.4	5.4	5.3
Under 1 year old M	0.2	0.5	0.7	0.5	0.5
" " F	11.1	6.9	6.5	5.2	6.7
Total Cattle	70.6	46.7	42.1	38.4	44.1
Breeding pigs	1.0	0.5	0.3	0.4	0.4
Total pigs	5.4	3.1	2.3	1.5	2.6
Breeding sheep	0.4	2.7	5.2	10.5	4.6
Total sheep	0.8	6.5	12.5	30.1	11.2
Work horses	4.2	3.0	1.6	1.0	2.1
Fowls over 6 months	253.4	86.3	39.5	17.9	59.9
Total poultry	558.2	168.8	82.6	32.1	120.9
Total livestock units	72.2	45.0	38.8	37.0	41.6

(1) Throughout the tables M indicates Male, and F indicates Female.

The figures in Table 29 also show the variation in the proportion of bulls to cows between farms of various sizes. On average one bull served 18 cows—in the three groups of farms above 25 acres in size the average number of cows per bull was roughly of this order. But farms of less than 25 acres had about 42 cows per bull. These averages undoubtedly conceal many variations and the fact that many herds managed without bulls and relied on the services of a neighbour's bull or on artificial insemination.

Herd Maintenance Policy.

Some very interesting differences may be observed in the classes of cattle carried on large and small farms. As might be expected, the larger the farm, the larger is the proportion and the number of followers per 100 acres. This is true except for heifer calves under one year old, which declined in number per 100 acres. Despite this, the small herds had fewer heifer calves in proportion to cows than large herds.

To what extent are dairy herds able to supply their own herd replacements and how long do cows remain in the milking herd? The numbers of dairy cattle shown to be in each age group on the annual Agricultural Returns provide some evidence on these points. In herds which are constant in size the number of heifers under one year old is a measure of the number of replacements available and may be compared with the number of cows in the herd as in Table 30. No allowance has been made for any heifer deaths before maturity but the figures show that all groups are well supplied with potential replacements. It does not follow that the actual rate of herd turnover is in any way related to the possible rate particularly on the larger farms. Many of these have more heifers than they require for their own herds and may sell surplus heifers to smaller farms or even, if

TABLE 30. HERD REPLACEMENT OF DAIRY FARMS OF EACH SIZE. Per 100 acres

Size group—adjusted acres	Heifers under 1 year	Cows and heifers in milk, and cows in calf	Ratio between heifers under 1 year and cows	Ratio between all heifers and cows
	1	2	3	4
5—24.9	11.1	48.7	1 : 4.4	1 : 2.4
25—99.9	6.9	25.7	1 : 3.7	1 : 1.4
100—299.9	6.5	19.7	1 : 3.0	1 : 1.0
300—699.9	5.2	15.8	1 : 3.0	1 : 0.8
All groups	6.7	22.2	1 : 3.3	1 : 1.1

price conditions are favourable, fatten them. There is, in fact, very considerable variation from farm to farm—some rearing all replacements and others buying them.

Table 31 shows the position on 56 East Midlands farms for which figures showing the cost of production of milk were available in 1951-52.

TABLE 31. HERD REPLACEMENT RATES ON 56 COSTED FARMS 1951-52.

Size group—adjusted acres	No. of farms	Percentage of replacements purchased	Annual rate of herd turnover—per cent
5—24.9	5	87	35
25—99.9	16	35	27
100—299.9	27	8	37
300—699.9*	8 (6)	34 (5)	32

* If two farms with unusual replacement policies are omitted, the average percentage of replacements purchased was five.

Age at calving.

There is considerable difference of opinion as to the age at which a heifer should be calved for the first time. Some claim that

they must be allowed to reach maturity at about three years of age. Others maintain that the life-time yield and stamina of well grown animals are not impaired by calving at two years and three months. In fact very little information is available regarding the age at which heifers actually do calve particularly on farms of various sizes.

The Agricultural Returns are not in sufficient detail to provide specific information, but they do shed some light on this matter. It is clear that if the age of the other dairy cattle is recorded with any accuracy that heifers over two years old (other than heifers in calf) must calve at an age exceeding two years and nine months. The average age of calving of all heifers cannot be determined without a division of heifers in calf according to age and this of course is not asked for in the Agricultural Returns. Table 32 shows that heifers two years old and over vary in importance according to size of farms and it is reasonable to conclude that the average age of heifers calving is higher on large than on small farms.

HEIFERS TWO YEARS AND OVER AS A PROPORTION OF TOTAL HEIFERS
TABLE 32. Per 100 acres

Size group—adjusted acres	Total heifers (including heifers carrying first calf)	Heifers 2 years and over not in calf	Heifers 2 years and over not in calf as percentage of all heifers
	1	2	3
5—24.9	20.3	2.4	11.8
25—99.9	18.8	2.6	13.8
100—299.9	20.1	3.6	17.9
300—699.9	20.4	4.2	20.6
All groups	19.7	3.2	16.2

Some evidence regarding the age of heifers at calving is available in the reports of the Milk Marketing Board on the National Milk Recording Scheme in England and Wales. The following figures have been extracted from these annual reports.⁽¹⁾

AGE OF HEIFERS AT CALVING.
TABLE 33. Average 1950 to 1952

Breed	No. of records	Average age (months)
Ayrshire	173	33
Friesian	287	34
Guernsey	54	32
Jersey	33	29
Red Poll	17	37
Shorthorn	159	36
South Devon	5	35
Weighted average	728	34

(1) MILK MARKETING BOARD. *National Milk Records Annual Reports*. Milk Marketing Board, Thames Ditton, Surrey. See also Appendix of 1947-48 Report.

There is clearly considerable difference between breeds, but the average, weighted by the number of records for each breed was 34 months. Farmers who take the trouble to record the yields of their cows may not, of course, be a true cross section of milk producers.

The high average age of calving suggested above may be the result of the considerable emphasis on Winter milk production in recent years. Many farmers prefer to calve heifers in the autumn, partly in order to maintain Winter milk supplies and partly because many believe that an Autumn calved heifer reverts to spring calving as she grows older. Many animals, therefore, may be six months or so older or younger than the ideal age at calving and it would naturally be easier to carry them for an extra year on large than on small farms. The Agricultural Returns show that more calves are born in the three months preceding 4th December than in any other quarter and that more than twice the number of heifers calve in September, October and November than in any other quarter of the year.⁽¹⁾

Reliance on purchased feeding stuffs.

To what extent are Dairy farms of various sizes able to maintain their livestock on the produce of their own land? This was a question of considerable importance when animal feeding stuffs were rationed and inter-farm movement of many feeds were controlled or prohibited. It is possible to provide an answer which gives a good reflection of the relative position on farms of various sizes even though it may be argued that the procedure followed is not sufficiently refined to provide a reliable measure of the absolute position.

Briefly, the procedure adopted has been to assume average levels of crop yields and of feed requirements for livestock, in terms of starch equivalent, and to calculate for each size of farm group the total yield of starch equivalent from feed crops, including grass, and the total requirements of all the livestock.

Estimated production of feedingstuffs.

Details have already been given (Table 27) of the acreage of each crop grown on Dairy farms. It has been assumed for the purposes of the following calculations that the produce of all the acreage devoted to wheat, barley, potatoes, sugar beet, fruit, vegetables

(1) MINISTRY OF AGRICULTURE AND FISHERIES. *Press Notice QC-EW/53(ix)d. Results of September, 1953 Census, England and Wales.*

and flowers has been sold and that the produce of the remaining area is all utilised for feeding livestock. To simplify the work of classification the feed acreage has been grouped into four categories—oats, other crops, temporary grass and permanent grass. Because 83 per cent of the Dairy farms in the Province are in Leicestershire and Derbyshire—the official yield estimates for these two counties for the five years 1947 to 1951 have been used as a basis. The following average yields per acre were assumed.

Crop, etc.	Total yield per acre	S.E. lbs. per acre
Oats	18 cwts. + straw	1,620
Other crops :—		
Mixed corn	18 cwts. + straw	1,620
Beans	14½ cwts.	1,120
Peas	13½ cwts.	1,050
Turnips and swedes	12½ tons	1,410
Mangolds	20 tons	2,688
Kale, cabbage etc	15 tons	3,024
Seeds hay	28½ cwts.	1,120
Meadow hay	19 cwts.	750
Rotational grazing		1,650
Permanent grazing		1,100

In arriving at an average for 'other crops' each average yield figure was weighted by the acreage of each crop grown. The estimate for grazing was based on the work of Pettit⁽¹⁾, and on unpublished calculations based on the residual method from national figures⁽²⁾. These calculations refer to all grassland, but the separate figures for rotation and permanent grass were obtained by assuming that the differences in grazing yields between these two forms of grass would correspond to the differences in hay yields and by taking account of the proportion of the total grazing acreage in Leicestershire and Derbyshire under rotation and permanent grass. The averages for all rotation and all permanent grass were obtained by weighting by the acreage devoted to hay and to grazing on each type of grass land.

These estimates are admittedly crude but they are the best that can be made with the data available. Applied to each size of

(1) G. H. N. PETTIT and J. CLARK. *Milk Production per acre.* Imperial Chemical Industries Ltd., Millbank, London. Bulletin No. 2. 1952.

(2) W. J. MORTIMER. Department of Agricultural Economics, University of Nottingham.

farm group, they should provide a pointer to the comparative position on each group.

OUTPUT OF STARCH EQUIVALENT ON DAIRY FARMS.

TABLE 34.

Crop	Starch Equivalent Per acre (lbs.)	Size of farm—adjusted acres				Lbs. per 100 acres East Midlands
		5— 24.9	25— 99.9	100— 299.9	300— 699.9	
Oats	1,620	6,869	14,288	14,823	14,483	14,467
Other crops (1)	1,900	25,080	35,720	41,857	45,771	39,615
Temporary grass	1,300	9,295	13,091	16,770	17,069	15,431
Permanent grass	1,000	75,410	62,310	55,920	53,840	58,360
Total	—	116,654	125,409	129,370	131,163	127,873

(1) No allowance has been made for the small quantities of sugar beet tops fed on some farms.

Table 34 shows what the starch equivalent production would be on the Dairy farms in the farm classification sample on the basis of these assumed yields. It will be seen that the total production per 100 acres varied but little, but that the smaller farms obtain a significantly higher proportion of the total from permanent grass.

Estimated Feed requirements.

Although there is far less variation in the feed requirements per head of livestock than of crop yields from farm to farm, it is not easy to lay down average figures that may be regarded as representative. The requirements of starch equivalent per head used in Table 35 have been worked out after consultation with the Provincial Advisor in Animal Nutrition for the East Midlands Province (Mr. Lewis), but the author is responsible for rounding and averaging certain figures.

ESTIMATED ANNUAL REQUIREMENTS OF STARCH EQUIVALENT.

TABLE 35.

Type of stock	Lbs. S.E. per head per annum	Size of farm—adjusted acres				Lbs. per 100 acres East Midlands
		5— 24.9	25— 99.9	100— 299.9	300— 699.9	
Cows, heifers in calf and bulls	4,000(a)	214,840	124,200	101,200	88,840	111,280
Other dairy cattle :-						
2 years old and over	3,100	7,347	8,587	11,966	13,826	10,633
1 year old and under 2	2,650	8,560	14,655	15,317	15,821	14,920
Under 1 year old	1,500	16,890	11,025	10,755	8,640	10,860
Breeding pigs	2,000	1,980	900	640	760	780
Other pigs	1,000(b)	4,490	2,680	1,940	1,090	2,250
Breeding sheep	750	293	2,040	3,930	7,875	3,413
Other sheep	300	120	1,134	2,175	5,877	1,995
Horses	3,500	14,525	10,535	5,460	3,500	7,455
Poultry	50	27,911	8,440	4,131	1,605	6,046
Total	—	296,956	184,196	157,514	147,834	169,632

(a) Assuming average yield of 600 gallons per cow.

(b) Assuming two lots fattened per annum.

There is a good deal of evidence that the standard requirement figures assumed are low. In 1951-52, the estimated gross production of milk per cow obtained by dividing the total national production of milk by the total number of cows was 600 gallons. The breakdown of the cattle figures in recent Agricultural Censuses⁽¹⁾ suggests that about 86 per cent of all cows are kept primarily for producing milk for sale. This implies that the national average yield for dairy cows, as opposed to beef cows, is now more than 600 gallons per annum. In 1951-52 the average lactation yield per cow in nearly 24,000 herds in the Milk Marketing Board's Milk Recording Scheme was 7,875-lbs.

Various enterprise cost studies have also suggested that the quantity of feed actually fed is in practice in excess of the quantities theoretically required. It has been calculated on the basis of the National Investigation into the Economics of Milk Production⁽²⁾ that, at the 600 gallon yield level the quantity of starch equivalent actually fed was 33 per cent above estimated requirements.

In order to arrive at an estimate of feed requirements which will take reasonable account of the difference between theoretical feeding standards and those actually achieved on the rank and file of farms, the figures of total requirements in Table 35 have been

COMPARISON OF STARCH EQUIVALENT REQUIRED AND AVAILABLE ON DAIRY FARMS
OF EACH SIZE.

TABLE 36.

	Size of farm—adjusted acres				Per farm
	5— 24.9	25— 99.9	100— 299.9	300— 699.9	
Starch equivalent (Lbs.) :—					
1. Required	66,420	125,430	282,722	647,112	179,262
2. Available	20,998	69,602	202,076	479,532	110,738
3. Deficit	45,422	55,828	80,646	167,580	68,524
4. Deficit—per cent of available	216.3	80.2	39.9	34.9	61.9
5. Average yield of S.E. lbs. per acre (Table 34)	1,167	1,254	1,294	1,312	1,279
6. Acreage required to provide deficit (3 ÷ 5)	38.9	44.5	62.3	127.7	53.6
7. Acreage now devoted to sale crops	0.8	5.4	19.5	51.2	10.0
8. Net deficit—acres	38.1	39.1	42.8	76.5	43.6
9. Net deficit—per cent of total crops and grass	211.7	70.5	27.4	20.9	50.3
10. Average size of farm, acres of crops and grass	18.0	55.3	156.2	365.6	86.6

(1) MINISTRY OF AGRICULTURE AND FISHERIES. *Agricultural returns, Livestock population on Agricultural holdings in England and Wales, September, 1953.* Statistics Series SL/53.c. E.W. Issued 10th November, 1953.

(2) National Investigation into the Economics of Milk Production. *Cost of Milk Production in England and Wales. October 1950 to September 1951.* p. 6. At the 600 gallon yield level the application of the function developed by Jensen, Woodward etc. (U.S. Department of Agriculture, Washington, U.S.A. Technical Bulletin No. 815) would make little difference to the estimate of theoretical requirements.

increased in Table 36 by one third of the originally estimated requirements of cows, heifers in calf and bulls. This admittedly begs the question of whether or not the theoretical requirements of other classes of livestock are in line with actual farm practice but the evidence on this point is far more scanty than for dairy cows. The immediate objective is to determine, with reasonable accuracy, the minimum quantities of nutrients which Dairy farms of various sizes will require for maintenance and production with their existing carry of livestock and at the current level of efficiency of livestock feeding.

Table 36 shows that in all size groups not enough feed crops were produced to provide for maintenance and production of all the livestock carried. Some sale crops were grown but even if these acres were devoted to the production of feed crops at the yield levels assumed there would not be a surplus available. The Dairy farms of less than 25 acres were so heavily stocked that they would have required an addition of more than double their existing acreage to be independent of purchased feeding stuffs. The average for all Dairy farms was a "deficit" of 50 per cent of their present acreage.

Both during and after the war, farmers were urged to become self-sufficient in the supply of animal feeding stuffs. The figures in Table 36 show very clearly what a very difficult task it would be for many farms to attain self-sufficiency. Nevertheless the production of crops and grass on many of these farms could be significantly improved. Under prevailing cost price conditions, it pays these farmers to increase the volume of their business still further by carrying as many livestock as they can accommodate and supplementing their production of home grown feeds with purchased feeding stuffs. It is also sound policy for the larger farms to use some land for the production of sale crops and to buy in protein feeds which cannot be grown satisfactorily on the land available.

A certain amount of evidence bearing on this point is available from the Farm Management Survey. Table 37 shows the relationship between crop sales and feed purchases for a group of East Midlands Dairy farms and an estimate of the extra acreage required for the production of the net quantity of feeding stuffs used in each size of farm. In making this calculation it has been assumed that the equivalent of one ton of purchased feed (costing £35 a ton) could be grown on one acre. It is recognised that the feed bought may well be of the type which could not be grown on the farms in question but it is reasonable to suppose that other crops could be grown for sale and suitable concentrates purchased with the proceeds.

CROP SALES AND FEED PURCHASES ON A SAMPLE OF EAST MIDLANDS DAIRY FARMS,
1951-52.

TABLE 37.

Size group—adjusted acres	No. of farms	Aver-age size (acres)	£ per farm			Acreage required to produce difference	Col. 6 as per centage of Col. 2.
			Crop sales	Feed purchases	Differ-ence		
5— 24.9	1	16	—	552	552	15.8	99.0
25— 99.9	17	52	88	900	812	23.2	44.5
100—299.9	22	172	325	1,810	1,485	42.5	24.7

The sample is small and may not be representative of the universe. Compared with the figures in Table 36, those in Table 37 suggest a lower degree of dependence on purchased feeding stuffs, but it is clear from both tables that in the East Midlands purchased feeding stuffs play a very important part in the economy of dairy farms.

Feed Acreage per Livestock Unit.

Using the data in Tables 27 and 36 an estimate can be made of the feed acreage required to support the livestock on Dairy farms of each size. This has been done in Table 38. It will be seen that

FEED ACREAGE PER LIVESTOCK UNIT ON DAIRY FARMS OF EACH SIZE.

TABLE 38.

Size of farm—adjusted acres	Crops and grass available	Required to provide deficit(net)	Total feed acreage	Per farm	
				L.S.U.	Acres per livestock unit
5— 24.9	acres 18.0	acres 38.1	acres 56.1	L.S.U. 13.0	acres 4.3
25— 99.9	55.3	39.1	94.4	24.9	3.8
100—299.9	156.2	42.8	199.0	60.6	3.1
300—699.9	365.6	76.5	442.1	135.3	3.3
All groups	86.6	43.6	130.2	36.0	3.6

more acres are required per livestock unit on the smaller farms. This is due to the different pattern of land utilisation. Yields were assumed, for the purposes of these calculations, to be the same on all sizes of farm. Little or no evidence is available to show whether or not this assumption is valid. There can be no doubt that small farms devote a higher proportion of their land to crops which, *on average*, provide a low output of starch equivalent per acre. The implications of this fact are clearly of considerable importance in deciding the best pattern of organisation and management for small farms.

PLATE 1.



DAIRYING. A scene near Lutterworth of an area where milk production is important. Note the pattern of the "ridge and furrow" of the pre-enclosure period.

PLATE 2.



DAIRYING. Another dairying region near Parwich, Derbyshire.

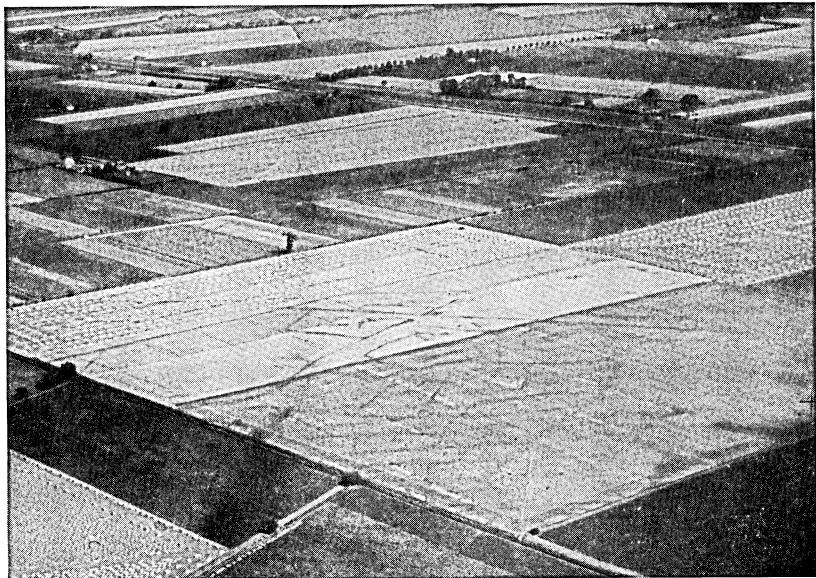
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PLATE 3.



DAIRYING AND LIVESTOCK REARING. Monks Dale, Derbyshire. As the altitude rises, milk production gives way to the rearing of cattle and sheep.

PLATE 4.



PREDOMINANTLY ARABLE. A view in South Lincolnshire showing a pattern of large fields under intensive arable cultivation. From the air the outline of small Celtic fields is seen.

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PLATE 5.



CROPPING WITH LIVESTOCK. This section of the Lincolnshire coast shows typical mixed farms with marsh grazings along the shore line.

PLATE 6.



CROPPING WITH LIVESTOCK. This area near Wyfordby, Leicestershire was formerly "butter and cheese" country but now arable crop production is of more importance.

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PLATE 7.



LIVESTOCK. This is a view in the famous grass fattening area near Medbourne, Leicestershire. The old "ridge and furrow" may be seen crossing present hedge lines.

PLATE 8.



MARKET GARDENING. Owston, Isle of Axholme. Small farms, much fragmented and often in strips. Main production is Market Garden type crops.

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Equipment.

In January 1948 a census of machinery on agricultural holdings was taken and an attempt has been made to identify, for all farms which appeared in the sample drawn for classification purposes, the appropriate Agricultural Machinery Return. This attempt was only partially successful; only about 90 per cent of the Machinery Returns relating to the sample farms could be traced. In raising the machinery figures a different raising factor was used to allow for the untraced returns on the assumption that there would be no bias towards big or small farms among them. Despite this, for some items of equipment the raised sample total was significantly different from that shown in the Agricultural Statistics. To some extent this difference may be due to the inclusion in the Agricultural Statistics of machinery owned and operated by agricultural contractors, who being without land, would not be required to complete an Agricultural Return. For items of equipment found on a majority of farms, the agreement between the raised sample total and the Agricultural Statistics total is reasonably good and there is no reason to suppose that the position on farms of different types and sizes has been misrepresented.

NUMBERS AND PERCENTAGE OF DAIRY FARMS WITH VARIOUS NUMBERS OF
TRACTORS (EXCLUDING ONE AND TWO WHEELED TRACTORS)
BY SIZE GROUPS.

TABLE 39.

TRACTORS PER FARM	SIZE OF FARMS—ADJUSTED ACRES										EAST MIDLANDS	
	5—24.9		25—99.9		100—299.9		300—699.9		700 & OVER			
	NOS.	%	NOS.	%	NOS.	%	NOS.	%	NOS.	%	NOS.	%
0.	463	82	2,461	63	365	20	4	4	—	—	3,293	51
1.	100	18	1,335	34	956	52	16	16	—	—	2,407	37
2.	—	—	120	3	432	23	30	31	—	—	582	9
3.	—	—	—	—	80	4	32	33	—	—	112	2
4.	—	—	—	—	16	1	16	16	—	—	32	1
5.	—	—	—	—	8	*	—	—	—	—	8	*
6.	—	—	—	—	—	—	—	—	2	100	—	—
7 OR MORE	—	—	—	—	—	—	—	—	—	—	2	*
TOTAL	563	100	3,916	100	1,857	100	98	100	2	100	6,436	100

* Less than 0.5 per cent.

The number of farms with 0, 1, 2 or more tractors (other than one or two wheeled tractors) is shown in Table 39. One and two wheeled tractors in fact represent only five or six per cent of the total number. It will be seen that in January, 1948 more than one half the Dairy farms in the Province were without tractors and that only slightly more than 11 per cent had more than one tractor. The figures show clearly the higher proportions of the larger farms with tractors.

On many Dairy farms, a milking machine may be the item of equipment which contributes most to the reduction of labour and drudgery. Table 40 shows the estimated number of Dairy farms of each size with milking machines at January, 1948. As might be expected the large farms had more and bigger units than the smaller farms. The total figures show that at that time more than two thirds of the Dairy farms in the Province were without milking machines.

Since January, 1948 mechanisation has proceeded apace in the East Midlands. Between that date and January, 1952 the number of tractors in the Province increased by 34 per cent. Because of this, the machinery census figures analysed for the purposes of

NUMBERS AND PERCENTAGE OF EAST MIDLANDS DAIRY FARMS WITH
MILKING MACHINES, BY SIZE GROUPS. JANUARY, 1948.
TABLE 40.

Type of machine	Size of farm—adjusted acres								East Midlands	
	5—24.9		25—99.9		100—299.9		300—699.9			
	Nos.	%	Nos.	%	Nos.	%	Nos.	%		
1 and 2 units	20	50	545	62	156	14	7	7	728 35	
3 units	20	50	241	28	580	54	16	17	857 41	
Over 3 units	—	—	89	10	347	32	71	76	507 24	
All types	40	100	875	100	1,083	100	94	100	2,092 100	

this classification are of limited use except as a basis for comparison with similar figures from the 1952 or more recent census. Such a comparison could shed valuable light on the problem of where mechanisation is occurring. Is it being carried out at the same rate on all types and sizes of farms? If there are significant differences in the rate of mechanisation, the causes of such differences should be studied in order to determine, for example, the importance of the supply of labour and capital in this connection.

CHAPTER VI.

GROUP 2. CROPPING WITH DAIRYING FARMS.

The title of this type group would perhaps be more descriptive of the organisation of the farms within it if it were reversed to read 'Dairying with Cropping' because about two thirds of the output of these farms is probably derived from livestock and livestock products.⁽¹⁾ Accounting studies have shown that milk and dairy products provide about 40 per cent of the net production of these farms. On predominantly Dairy farms about 70 per cent of net production is derived from this source. Two thirds of all the cows and heifers in milk and in calf are to be found on Dairy and Cropping with Dairying farms.

Size Distribution.

Derbyshire and Leicestershire were the counties with the most Dairy farms but Nottinghamshire and Lincs. (Lindsey) had the most Cropping with Dairying farms. Cropping with Dairying farms are bigger than Dairy farms—the average size being 109 acres compared with 87 acres. Table 41 shows that the size group containing the largest number of farms was that between 50 and 75 acres. The modal size varied from county to county, being between 25 and 50 acres in Lindsey and between 75 and 100 acres in Leicestershire.

Despite this, comparison with table 23 of Chapter V (p. 59) shows that the range in average size of farm from county to county was much less for Cropping with Dairying than for Dairy farms.

CROPPING WITH DAIRYING FARMS IN EACH COUNTY IN EACH SIZE GROUP.							No. of farms
Size group—adjusted acres	Nott-ingham	Leic-ester	Derby	Lindsey	Kest-even	Rut-land	East Midlands
1. 1— 4.9	—	—	—	—	—	—	—
2. 5— 24.9	—	—	20	20	20	—	60
3. 25— 49.9	70	20	20	200	70	—	380
50— 74.9	130	40	50	120	80	2	422
75— 99.9	60	130	20	120	40	2	372
4. 100—149.9	92	76	48	88	48	4	356
150—199.9	80	32	44	28	32	2	218
200—249.9	32	56	12	28	16	1	145
250—299.9	16	16	4	16	12	—	64
5. 300—699.9	12	16	—	16	8	—	52
6. 700 and over	—	—	—	1	—	—	1
All sizes	492	386	218	637	326	11	2,070
Average size—acres of crops and grass	116	136	106	91	105	121	109

(1) Chapter IV. Tables 21 and 22 pp. 57 and 58.

Employment of Labour.

Size of farm, or more strictly, size of farm business is reflected in the number of workers employed. Table 42 shows the number of Cropping with Dairying farms with various numbers of regular workers (other than the farmer and his wife). About 23 per cent had no such workers and it is interesting to note that 49 of the farms without regular workers had over 100 adjusted acres of land. The most common number of regular workers was two per farm compared with one per farm in the Dairy Group. The figures for the 5 to 24.9 acres group should be interpreted with some caution—the sampling fraction in this group was one twentieth. Consequently, the sample as drawn consisted of only three farms—one of which carried an unusually heavy labour force. It would be quite wrong to state categorically that the number of Cropping with Dairying farms under 25 acres is exactly sixty and that one third of these employ two regular workers but one would be justified in saying that less than five per cent of farms of this type are less than 25 acres in size and that the majority of them employ no regular workers.

NUMBER AND PERCENTAGE OF CROPPING WITH DAIRYING FARMS WITH VARIOUS NUMBERS OF REGULAR WORKERS.

TABLE 42.

Number of regular workers per farm	Size of farm—adjusted acres										No. of farms	
	5—24.9		25—99.9		100—299.9		300—699.9		700 and over		Nos.	%
	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%		
0.	40	67	380	32	45	6	4	8	—	—	469	23
1.	—	—	382	33	68	9	2	4	—	—	452	22
2.	20	33	312	27	172	22	2	4	—	—	506	24
3.	—	—	60	5	214	27	2	4	—	—	276	13
4.	—	—	40	3	105	13	6	11	—	—	151	7
5.	—	—	—	—	82	10	—	—	—	—	82	4
6.	—	—	—	—	36	5	4	8	—	—	40	2
7.	—	—	—	—	29	4	8	15	—	—	37	2
8.	—	—	—	—	12	2	2	14	—	—	14	1
9.	—	—	—	—	—	—	14	27	—	—	14	1
10.	—	—	—	—	4	*	2	4	—	—	6	*
11 or more	—	—	—	—	16	2	6	11	1	100	23	1
All groups	60	100	1,174	100	783	100	52	100	1	100	2,070	100

* less than 0.5 per cent.

Compared with Dairy farms, more regular and casual workers are employed per 100 acres on Cropping with Dairying farms, but because of the larger average size of farm the input of labour, including an allowance for the manual labour of the farmer and his wife at the rate of one 'man' per holding, was not much greater. The average for the group was 3.8 men per 100 acres or about 26 acres per person available. About one third of the labour returned at June was 'Casual and Other' but only about 10 per cent of the total workers employed were females.

NUMBER OF WORKERS ON CROPPING WITH DAIRYING FARMS OF EACH SIZE.

TABLE 43.

Per 100 acres

Type of labour	Size of farm—adjusted acres				East Midlands
	5— 24.9	25— 99.9	100— 299.9	300— 699.9	
Regular —male	3.2	1.6	2.0	1.8	1.8
—female	—	.2	.1	.2	.2
—Total	3.2	1.8	2.1	2.0	2.0
Casual —male	—	.4	.2	.1	.2
—female	—	.1	.1	.5	.1
Other(1)	—	.6	.6	.5	.6
Total casual and other	—	1.1	.9	.6	.9
All 'hired' workers	3.2	2.9	3.0	2.6	2.9
Persons available (2)	8.0	4.5	3.6	2.9	3.8
Total 'hired' workers per farm	.7	1.8	5.0	9.2	3.2

(1) Women's Land Army and Prisoners of War.

(2) Including allowance for manual work of farmer and wife.

Land Utilisation.

All farms in the cropping groups must, by definition, have more than 25 per cent of their crops and grass acreage under crops for sale (i.e. wheat, barley, potatoes, sugar beet, fruit, vegetables and flowers). On average, Cropping with Dairying farms had nearly 35 per cent under sale crops, more than 50 per cent under tillage and 66 per cent under arable crops.

LAND UTILISATION ON CROPPING WITH DAIRYING FARMS OF EACH SIZE.

TABLE 44

Per 100 acres

Crop	Size of farm—adjusted acres				East Midlands
	5— 24.9	25— 99.9	100— 299.9	300— 699.9	
Wheat	13.5	14.2	16.0	14.5	15.2
Barley	14.3	8.4	7.5	8.4	7.9
Oats	7.9	8.6	7.8	6.2	7.9
Potatoes	2.0	5.9	5.2	5.5	5.5
Sugar beet	3.2	3.4	2.6	1.9	2.8
Fruit, vegetables and flowers	1.6	3.3	3.2	4.2	3.3
Other crops	7.5	9.8	9.7	10.4	9.8
Total tillage	50.0	53.6	52.0	51.1	52.4
Temporary grass	5.6	12.3	13.8	15.7	13.5
Total arable	55.6	65.9	65.8	66.8	65.9
Permanent grass	44.4	34.1	34.2	33.2	34.1
Total crops and grass	100.0	100.0	100.0	100.0	100.0
Average size (acres)—crops and grass	21.0	62.8	168.4	359.1	109.3
—rough grazing	6.3	1.1	1.3	—	1.3

The variation in the proportion of land under tillage in various size of farm groups was remarkably small and there was some tendency for the proportion of sale crops to vary more than the proportion of

feed crops. The real difference between size groups was in the type of grass. The small farms had a lower proportion of temporary grass than the large farms and conversely, proportionately more permanent grass. But, as with Dairy farms, it was only in the smallest group that the land utilisation was significantly different. The three groups of farms above 25 acres in size used their land in a very uniform fashion. This was broadly true of the individual crops although the larger farms had a slightly lower proportion of land under oats and sugar beet. This may be a reflection of variations between counties or areas and not of true differences in land use on farms of varying size under given conditions.

Livestock Carry.

Cows are by far the most important class of stock on these farms. Table 45 summarises the number of farms with herds of the sizes indicated.

NUMBERS AND PERCENTAGE OF CROPPING WITH DAIRYING FARMS OF EACH SIZE
WITH VARIOUS NUMBERS OF COWS.

TABLE 45.

Number of cows and heifers in milk, and cows in calf	Size of farm—adjusted acres										East Midlands	
	5—24.9		25—99.9		100—299.9		300—699.9		700 & over			
	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
Under 5	20	33	60	5	—	—	—	—	—	—	80	4
5—9	40	67	422	36	—	—	—	—	—	—	462	22
10—14	—	—	421	36	52	6	—	—	—	—	473	23
15—19	—	—	170	14	154	20	—	—	—	—	324	16
20—24	—	—	71	6	153	20	—	—	—	—	224	11
25—29	—	—	30	3	153	20	—	—	—	—	183	9
30—39	—	—	—	—	139	17	10	19	—	—	149	7
40—49	—	—	—	—	84	10	6	12	—	—	90	4
50—59	—	—	—	—	28	4	14	27	—	—	42	2
60 & over	—	—	—	—	20	3	22	42	1	100	43	2
Total	60	100	1,174	100	783	100	52	100	1	100	2,070	100

Eighty farms had less than five cows. At first sight, it seems incongruous to regard such farms as 'Cropping with Dairying important', but each one fulfills the requirements of having more than 10 cows per 100 acres. On a farm of 30 acres, four cows plus one or two young beasts would probably utilise about one third of the available land and provide from one quarter to one third of the farm income. Herds on Cropping with Dairying farms were generally smaller than on specialised Dairy farms—the average size of herd being 19 compared with 23 cows. Although the same proportion of herds had from 10 to 20 cows, the true Dairy farms had a lower proportion of very small herds and more very large herds.

Table 46 shows the carry of livestock of all types. Cropping with Dairying farms devoted from three to four times as much of their resources to growing crops for sale as Dairy farms and it is natural, therefore, for their carry of livestock to be lower. On average they had 29 livestock units per 100 acres compared with 42 on Dairy farms. A common feature was the greater intensity of stocking particularly with pigs and poultry on farms of less than 25 acres and the comparative uniformity of livestock density on all the larger size groups.

This uniformity, in fact, conceals important differences in the type of livestock carried. Compared with Dairy farms, the Cropping with Dairying farms had many fewer cattle per 100 acres; fewer sheep and horses but more pigs and poultry. It is also interesting to notice the relative importance attached to breeding stock in each of the size of farm groups. As might be expected, cows were a higher proportion of total cattle in the lower size groups—70 per cent as against about 57 per cent on the large farms with more land available for rearing replacements. On farms of over 300 acres, breeding pigs were 18 per cent of total pigs, but on farms of between 25 and 100 acres only 14 per cent. For sheep, the trend was the other way, breeding sheep being 45 per cent of the total on farms of between 25 and 100 acres and 37 per cent of the total on farms of over 300 acres.

LIVESTOCK CARRY ON CROPPING WITH DAIRYING FARMS OF EACH SIZE.
TABLE 46.

Type of stock	Size of farm—adjusted acres				Per 100 acres East Midlands
	5—24.9	25—99.9	100—299.9	300—699.9	
Cows and heifers in milk	19.0	13.4	11.5	9.6	12.0
Cows in calf, but not in milk	4.8	2.5	2.0	2.6	2.3
Heifers in calf, with first calf	1.6	2.5	3.1	4.6	3.0
Bulls	—	0.8	0.7	0.7	0.7
Other cattle :—					
2 years old and over M	—	0.2	0.4	0.9	0.4
" " " F	1.6	1.4	2.3	1.4	1.9
1 year old and under 2 M	—	0.3	0.4	0.9	0.4
" " " F	1.6	3.6	3.9	3.7	3.8
Under 1 year old M	—	0.7	0.6	1.0	0.6
" " " F	7.9	4.6	5.0	4.0	4.8
Total cattle	36.5	30.0	29.9	29.4	29.9
Breeding pigs	—	0.6	0.4	0.3	0.5
Total pigs	7.9	4.3	2.8	1.7	3.2
Breeding sheep	—	2.5	4.3	6.2	3.8
Total sheep	—	5.6	10.0	16.7	9.0
Work horses	6.4	2.6	1.3	1.0	1.7
Fowls over 6 months	341.3	105.2	39.1	16.9	60.4
Total poultry	773.0	216.9	94.1	38.4	133.0
Livestock units	45.7	30.6	27.9	27.5	28.8

Although they accounted for only five per cent of the total cattle stock, male cattle (other than bulls) were more numerous than

on Dairy farms. But in other respects, the position on the two type groups was very similar—the larger farms had more heifers in calf and more two year old and yearling heifers but fewer heifers under one year old per 100 acres. Farms of under 25 acres in particular in both groups had much higher numbers of heifer calves per 100 acres.

Distribution of Tractors.

Since 1947 there has been a big increase in the number of tractors on East Midland farms, but it is still of interest to compare the distribution of tractors on farms of various types and sizes. Fifty per cent of all Dairy Farms were without tractors (other than one or two wheeled types) but only twenty per cent of Cropping with Dairying farms had no such tractors (Table 47). Very few farms had more than two tractors at that time.

NUMBERS AND PERCENTAGE OF CROPPING WITH DAIRYING FARMS WITH VARIOUS NUMBERS OF TRACTORS (EXCLUDING ONE AND TWO WHEELED TRACTORS) BY SIZE GROUPS.

TABLE 47.

TRACTORS PER FARM	SIZE OF FARM—ADJUSTED ACRES										EAST MIDLANDS	
	5—24.9		25—99.9		100—299.9		300—699.9		700 AND OVER			
	NOS.	%	NOS.	%	NOS.	%	NOS.	%	NOS.	%		
0.	20	33	360	31	36	5	—	—	—	—	416 20	
1.	40	67	683	58	317	40	—	—	—	—	1,040 50	
2.	—	—	131	11	336	43	320	38	—	—	487 24	
3.	—	—	—	—	66	8	16	31	—	—	82 4	
4.	—	—	—	—	16	2	16	31	1	100	33 2	
5.	—	—	—	—	8	1	—	—	—	—	8 *	
6.	—	—	—	—	4	1	—	—	—	—	4 *	
7 OR MORE	—	—	—	—	—	—	—	—	—	—	—	
Total	60	100	1,174	100	783	100	52	100	1	100	2,070 100	

* Less than 0.5 per cent.

CHAPTER VII.

CROPPING FARMS WITH PIGS OR POULTRY GROUPS 3A AND 3B.

These two small groups consist of cropping farms on to which fairly intensive pig or poultry enterprises have been superimposed. By definition, 25 per cent of their crops and grassland was devoted to crops for sale (i.e. wheat, barley, potatoes, sugar beet, fruit, vegetables and flowers) and each farm was required to carry 60 pigs or 1,000 poultry per 100 acres. Only 111 farms, or less than one per cent of all the full time farms in the Province, were estimated to fulfil these requirements in 1947. Many of these were small, so that only 14 Agricultural Returns were included in the sample. This shows clearly that Groups 3A and 3B are not of much importance in the East Midlands but it follows that the average figures for each size of farm group may be subject to a margin of error. For this reason, very little comment will be made about the summary tables presented at the end of this chapter.

The general picture which emerges from a study of these tables is that these farms are small in size. There is no evidence that they are concentrated in one county or area of the province. Many of them are intensively run and the average number of workers employed per 100 acres is high. On average, more than half the crops and grassland was under tillage and the bulk of this area was devoted to crops for sale.

Both groups had a high density of livestock carry. Apart from pigs or poultry, cattle were the most important stock carried. The small farms had many more livestock units per 100 acres than the bigger farms and almost certainly would not have been able to grow all the feed required even if all the farm acreage was devoted to suitable crops.

It was noticed (See Chapter XI) that on specialist Poultry farms a large proportion of the cattle were females. Table 52(B). suggests that this was also true on Cropping with Poultry farms. At the same time Cropping with Pigs farms had a much higher proportion of male cattle. In this respect they resembled Market Gardens.

How many livestock were carried per farm ? This information can of course be calculated from the data in the tables and in many senses the figures provide a better measure of the range in size of unit. In Group 3A, the sample farm in the smallest group represented

(5 to 24.9 acres) had 177 pigs and that between 300 and 700 acres had 1,140. Similarly the size of poultry flock varied from 475 birds in the smallest farm size group to nearly 11,000 in the largest.

CROPPING WITH PIGS FARMS (GROUP 3A) AND CROPPING WITH POULTRY FARMS (GROUP 3B)
IN EACH COUNTY IN EACH SIZE GROUP.

TABLE 48.

Numbers

Size group—adjusted acres	Numbers													
	Nott-ingham		Leic-ester		Derby		Lindsey		Kest-even		Rut-land		East Midlands	
	3A	3B	3A	3B	3A	3B	3A	3B	3A	3B	3A	3B	3A	3B
1. 1—4.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2. 5—24.9	20	—	—	—	—	20	—	—	—	—	—	20	—	20
3. 25—49.9	10	—	—	—	10	—	—	—	20	—	—	10	—	20
50—74.9	—	—	—	—	—	—	10	—	—	—	—	—	—	20
75—99.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4. 100—149.9	—	4	—	—	—	4	—	—	4	—	—	4	—	8
150—199.9	—	—	—	—	—	—	—	—	—	—	—	4	—	—
200—249.9	4	—	—	—	—	—	—	—	—	—	—	—	—	—
250—299.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5. 300—699.9	—	—	—	—	—	—	2	—	—	2	—	—	2	2
6. 700 and over	—	—	—	—	—	—	—	—	—	—	—	—	—	—
All sizes	34	4	—	10	—	24	2	10	4	22	—	1	40	71

PERCENTAGE OF CROPPING WITH PIGS (GROUP 3A) AND CROPPING WITH POULTRY (GROUP 3B) FARMS WITH VARIOUS NUMBERS OF REGULAR WORKERS.

TABLE 49.

Number of regular workers per farm	Size of farm—adjusted acres										East Midlands		
	1—4.9		5—24.9		25—99.9		100—299.9		300—699.9				
	3A	3B	3A	3B	3A	3B	3A	3B	3A	3B	3A	3B	
0.	—	—	—	100	—	—	—	—	—	—	—	—	28
1.	—	100	—	100	—	—	75	—	—	—	—	—	44
2.	—	—	100	—	—	—	25	—	—	—	—	—	50
3.	—	—	—	—	—	—	—	—	—	—	—	—	14
4.	—	—	—	—	—	—	—	—	50	—	—	—	6
5.	—	—	—	—	—	—	—	—	—	—	—	—	10
6.	—	—	—	—	—	—	—	—	—	—	—	—	—
7.	—	—	—	—	—	100	—	—	—	—	—	—	25
8.	—	—	—	—	—	—	—	—	—	—	—	—	—
9.	—	—	—	—	—	—	—	—	50	—	—	—	5
10.	—	—	—	—	—	—	—	—	—	100	—	—	—
11 or more	—	—	—	—	—	—	—	—	50	—	100	100	15
Total	—	100	100	100	100	100	100	100	100	100	100	100	100

NUMBER OF WORKERS ON CROPPING WITH PIGS (GROUP 3A) FARMS OF EACH SIZE.

TABLE 50(A).

Per 100 acres

Type of labour	Size of farm—adjusted acres				East Midlands
	5—24.9	25—99.9	100—299.9	300—699.9	
Regular —male	12.5	15.6	7.8	2.3	7.6
—female	—	2.6	0.3	—	0.4
—Total	12.5	18.2	8.1	2.3	8.0
Casual —male	—	—	0.8	—	0.4
—female	—	—	0.6	0.4	0.7
Other(1)	—	2.6	—	—	—
Total casual and other	—	2.6	1.4	0.4	1.1
All 'hired' workers	12.5	20.8	9.5	2.7	9.1
Persons available(2)	18.8	23.4	10.1	2.9	10.4
Total 'hired' workers per holding	2.0	8.0	17.0	13.0	7.1

(1) Women's Land Army and Prisoners of War.

(2) Including allowance for manual work of farmer and wife.

NUMBER OF WORKERS ON CROPPING WITH POULTRY (GROUP 3B) FARMS OF EACH SIZE.
TABLE 50(B).

Type of labour	Size of farm—adjusted acres					Per 100 acres East Midlands
	1—4.9	5—24.9	25—99.9	100—299.9	300—699.9	
Regular —male	40.0	—	2.1	4.2	3.3	2.8
—female	—	—	0.5	0.7	0.2	0.5
—Total	40.0	—	2.6	4.9	3.5	3.3
Casual —male	—	—	—	0.4	0.5	0.2
—female	—	—	—	1.1	—	0.3
Other(1)	—	—	1.1	0.4	0.6	0.7
Total casual and other	—	—	1.1	1.9	1.1	1.2
All 'hired' workers	50.0	—	3.7	6.8	4.6	4.5
Persons available(2)	80.0	6.5	5.8	7.6	4.8	6.1
Total 'hired' workers per holding	1.0	—	1.8	9.0	29.0	2.8

(1) Women's Land Army and Prisoners of War.

(2) Including allowance for manual work of farmer and wife.

LAND UTILISATION ON CROPPING WITH PIGS (GROUP 3A) FARMS OF EACH SIZE.
TABLE 51(A).

Crop	Size of farm—adjusted acres				Per 100 acres East Midlands
	5—24.9	25—99.9	100—299.9	300—699.9	
Wheat	—	10.4	10.3	2.9	7.0
Barley	50.0	5.2	4.5	41.3	20.6
Oats	—	10.4	4.4	6.2	5.2
Potatoes	—	6.5	17.3	9.4	11.7
Sugar beet	—	—	5.0	—	2.3
Fruit, vegetables and flowers	—	7.8	6.1	16.2	8.8
Other crops	—	6.5	17.6	2.0	9.6
Total tillage	50.0	46.8	65.2	78.0	65.2
Temporary grass	—	10.3	14.2	—	7.9
Total arable	50.0	57.1	79.4	78.0	73.1
Permanent grass	50.0	42.9	20.6	22.0	26.9
Total crops and grass	100.0	100.0	100.0	100.0	100.0
Average size (acres) —crops and grass	16.0	38.5	179.5	474.0	77.2
—rough grazing	—	28.0	—	—	7.0

LAND UTILISATION ON CROPPING WITH POULTRY (GROUP 3B) FARMS OF EACH SIZE.
TABLE 51(B).

Crop	Size of farm—adjusted acres					Per 100 acres East Midlands
	1—4.9	5—24.9	25—99.9	100—299.9	300—699.9	
Wheat	—	—	10.4	6.8	16.5	10.6
Barley	—	38.7	10.2	6.0	22.0	14.5
Oats	—	—	8.0	14.0	2.3	7.3
Potatoes	100.0	—	11.5	6.8	9.5	9.1
Sugar beet	—	—	0.8	2.3	9.0	3.4
Fruit, vegetables and flowers	—	—	6.4	2.1	1.8	3.6
Other crops	—	—	14.5	4.7	3.9	8.2
Total tillage	100.0	38.7	61.8	42.7	65.0	56.7
Temporary grass	—	—	12.8	23.1	16.9	15.4
Total arable	—	38.7	74.6	65.8	81.9	72.1
Permanent grass	—	61.3	25.4	34.2	18.1	27.9
Total crops and grass	100.0	100.0	100.0	100.0	100.0	100.0
Average size (acres)						
—crops and grass	2.5	15.5	46.8	132.3	635.5	63.5
—rough grazing	4.0	—	—	—	—	0.1

LIVESTOCK CARRY ON CROPPING WITH PIGS FARMS (GROUP 3A) OF EACH SIZE.

TABLE 52(A).

Type of Stock	Size of farm—adjusted acres				Per 100 acres East Midlands
	5—24.9	25—99.9	100—299.9	300—699.9	
Cows and heifers in milk	—	7.8	3.3	8.8	2.8
Cows in calf, but not in milk	—	7.8	—	—	1.0
Heifers in calf, with first calf	—	5.2	3.9	—	2.4
Bulls	—	5.2	0.3	—	0.8
Other cattle :—					
2 years old and over M	—	18.2	2.8	5.7	5.3
" " " F	—	15.6	—	—	1.9
1 year old and under 2 M	—	5.2	—	4.0	1.9
" " " F	—	5.1	—	—	0.7
Under 1 year old M	—	—	—	0.4	0.1
" " " F	—	—	2.0	—	0.9
Total cattle	—	70.1	12.3	10.9	17.8
Breeding pigs	106.3	103.9	7.8	15.6	32.4
Total pigs	1106.3	392.2	71.9	240.5	270.7
Breeding sheep	—	—	—	—	—
Total sheep	—	—	—	—	—
Work horses	6.4	5.2	1.4	1.5	2.4
Fowls over 6 months	156.3	49.4	13.9	4.2	30.1
Total poultry	156.3	103.9	26.2	16.9	46.5
Total livestock units	165.9	127.4	22.9	44.6	57.6

LIVESTOCK CARRY ON CROPPING WITH POULTRY FARMS (GROUP 3B) OF EACH SIZE.

TABLE 52(B).

Type of Stock	Size of farm—adjusted acres					Per 100 acres East Midlands
	1—4.9	5—24.9	25—99.9	100—299.9	300—699.9	
Cows and heifers in milk	—	12.9	8.6	3.0	—	5.1
Cows in calf, but not in milk	—	—	—	—	—	—
Heifers in calf, with first calf	—	6.5	1.0	3.8	0.8	1.0
Bulls	—	—	—	—	—	—
Other cattle :—						
2 years old and over M	—	—	—	—	—	—
" " " F	—	—	1.1	0.7	3.9	1.7
1 year old and under 2 M	—	—	1.1	—	—	0.5
" " " F	—	—	—	1.5	—	0.4
Under 1 year old M	—	—	3.2	—	—	1.3
" " " F	80.0	—	4.3	2.3	—	2.4
Total cattle	80.0	19.4	19.3	12.1	3.9	13.3
Breeding pigs	—	19.4	2.1	1.9	9.3	5.3
Total pigs	480.0	19.4	4.3	20.8	51.8	22.8
Breeding sheep	—	—	—	13.2	—	3.1
Total sheep	—	—	—	30.2	—	7.1
Work horses	—	—	3.2	1.9	1.1	2.1
Fowls over 6 months	8,000.0	2,25.8	1,129.4	1,020.8	637.3	907.0
Total poultry	19,000.0	3,451.6	2,503.7	2,090.8	1,699.5	2,254.6
Total livestock units	285.3	56.7	42.6	39.4	29.4	39.2

PERCENTAGE OF CROPPING WITH PIG (GROUP 3A) AND CROPPING WITH POULTRY (GROUP 3B) FARMS WITH VARIOUS NUMBERS OF TRACTORS (EXCLUDING ONE AND TWO WHEELED TRACTORS) BY SIZE GROUPS.

TABLE 53.

Number of tractors per farm	Size of farm—adjusted acres								East Midlands	
	1—4.9		5—24.9		25—99.9		100—299.9			
	3A	3B	3A	3B	3A	3B	3A	3B		
0.	—	100	100	100	—	50	—	50	100	—
1.	—	—	—	—	100	50	50	50	—	55
2.	—	—	—	—	—	—	—	—	—	35
3.	—	—	—	—	—	—	—	—	—	10
4.	—	—	—	—	—	—	—	—	—	—
5.	—	—	—	—	—	—	—	—	—	—
6.	—	—	—	—	—	—	—	—	—	—
7 or more	—	—	—	—	—	—	—	—	—	—
Total	—	100	100	100	100	100	100	100	100	100

CHAPTER VIII.

PREDOMINANTLY ARABLE FARMS.

Group 4. Predominantly Arable.

Group 5. Predominantly Arable with Some Livestock.

It is appropriate to deal with these two types of farm groups in the same chapter because of their many common characteristics. The most important of these is that, by definition, both have more than 50 per cent of their crops and grassland under crops for sale (i.e. wheat, barley, potatoes, sugar beet, fruit, flowers and vegetables). Together these two groups embrace 17 per cent of the full-time farms in the Province and of this proportion, Group 4, consisting of Predominantly Arable farms furnishes three quarters. Taken together again, these two groups include nearly one third of all full-time Lindsey farms and nearly one half of all Kesteven farms—in fact, over 80 per cent of Predominantly Arable⁽¹⁾ farms were found within these two counties.

The number of farms of each size in each county is shown in Table 54 for both farm types. It will be recalled that Group 4 farms have by definition, less than 20 livestock units per 100 acres, and Group 5 farms more than this number. The range in size shown is very considerable, an appreciable number being under 25 acres in size and over 700 acres. It is noticeable that the Predominantly Arable farms with Some Livestock were smaller than the Predominantly

**PREDOMINANTLY ARABLE (GROUP 4) AND PREDOMINANTLY ARABLE WITH
SOME LIVESTOCK (GROUP 5) FARMS IN EACH COUNTY IN EACH SIZE GROUP.**

Size group— adjusted acres	Numbers													
	Nottingham		Leic- ester		Derby		Lindsey		Kesteven		Rut- land	East	Midlands	
	4	5	4	5	4	5	4	5	4	5	4	5	4	5
1. 1—4.9	—		—		—		—		—		—		—	
2. 5—24.9	40	40	—		—		20	100		100	60	20	2	—
3. 25—49.9	40	10	20	—		10	—		210	110	120	50	3	2
50—74.9	50	40	—		10	—		150	50		100	6	2	403
75—99.9	20	10	—		20	—		80	30		70	20	4	3
4. 100—149.9	40	8	8	—		8	—		128	56	88	44	11	3
150—199.9	20	20	4	12	—		—	—	136	16	96	16	7	3
200—249.9	16	4	16	8	—		—	—	76	32	68	12	1	1
250—299.9	20	8	—		—		—	—	72	8	36	12	4	—
5. 300—699.9	18	8	4	8	—		—	—	176	28	116	40	14	4
6. 700 and over	2	—	—		1	—		—	33	9	42	2	2	328
Total	266	148	52	29	48	20	1,161	439	796	216	54	20	2,377	872

(1) Unless the context indicates the contrary, the term 'Predominantly Arable' will be used as an abbreviated reference to Groups 4 and 5 jointly.

Arable farms with little or no livestock. In fact 40 per cent of the farms in Group 5 were below 50 acres in size and the modal group was that between 5 and 25 acres. For Group 4, the Predominantly Arable farms, the modal group was between 25 and 50 acres. In Group 5, there was a marked concentration of farms between the 100 and 150 acres size limits.

Employment of Labour.

There are many measures of farm 'size' and the number of persons regularly employed is one of the most easily found. Table 55 shows the distribution of farms in Groups 4 and 5 with various numbers of regular workers.

A feature of this Table is the numbers of large farms without regular workers. Many of these are part of multiple farming units, that is, complete farms under central management, where for some reason the labour employed has been recorded on a single return. In many instances, the workers do in fact travel from the main farm as may be necessary.

PERCENTAGE OF PREDOMINANTLY ARABLE (GROUP 4) AND PREDOMINANTLY ARABLE WITH SOME LIVESTOCK (GROUP 5) FARMS WITH VARIOUS NUMBERS OF REGULAR WORKERS.

TABLE 55.

Number of regular workers per farm	Size of farm—adjusted acres										East Midlands	
	5—24.9		25—99.9		100—299.9		300—699.9		700 and over		4	5
	4	5	4	5	4	5	4	5	4	5	4	5
0.	60	33	31	26	8	4	2	2	1	—	20	18
1.	30	56	29	37	6	11	—	—	—	—	16	29
2.	10	11	22	34	12	20	—	—	—	—	14	21
3.	—	—	14	3	17	19	—	—	—	—	11	7
4.	—	—	2	—	13	17	5	—	—	—	6	5
5.	—	—	2	—	9	8	10	2	—	—	6	3
6.	—	—	—	—	11	9	6	22	—	—	5	5
7.	—	—	—	—	10	3	6	16	3	7	5	3
8.	—	—	—	—	4	3	6	5	—	—	2	2
9.	—	—	—	—	2	3	9	11	—	—	2	2
10.	—	—	—	—	3	—	7	9	4	—	2	1
11 or more	—	—	—	—	5	3	46	32	91	93	11	5
Total	100	100	100	100	100	100	100	100	100	100	100	100

Although in number, Predominantly Arable farms were only 17 per cent of all full-time farms in the Province, 30 per cent of all workers were employed on these farms. The figures in tables 56(A) and 56(B), illustrate the intensity of labour use per 100 acres of crops and grass. Several points are worth noting. First of all, the greater intensity of labour use in the under 25 acre group, secondly the comparative uniformity of the level of employment of 'hired' labour in all other size groups; and thirdly, the greater reliance on casual labour on the smaller sized farms. More 'hired' workers per 100

acres were found on Group 4 farms despite their larger average size. On average, the labour 'team' was 7.3 'hired' persons per holding compared with 5.1 persons on Predominantly Arable with some Livestock farms. The number of persons available was derived by adding to the 'hired' labour force, one person per farm to represent the *manual* labour contribution of the farmer and his wife. This is probably an over-estimate and even unrealistic but on the smaller farms, it certainly constitutes a necessary correction.

It is worth noting that these tables (and the corresponding ones for other type groups) suggest that the number of men employed per 100 acres is greater on the larger farms than on medium sized farms.

NUMBERS OF WORKERS ON PREDOMINANTLY ARABLE (GROUP 4) FARMS OF EACH SIZE.
TABLE 56(A). Per 100 acres

Type of labour	Size of farm—adjusted acres					East Midlands
	5— 24.9	25— 99.9	100— 299.9	300— 699.9	700 and over	
Regular —male	3.1	2.0	2.2	2.2	2.5	2.3
—female	—	.4	.3	.3	.3	.3
—Total	3.1	2.4	2.5	2.5	2.8	2.6
Casual —male	2.4	.7	.3	.2	.2	.3
—female	.6	.8	.3	.3	.3	.4
Other(1)	—	.6	.7	.8	.8	.7
Total casual and other	3.0	2.1	1.3	1.3	1.3	1.4
All 'hired' workers	6.1	4.5	3.8	3.8	4.1	4.0
Persons available(2)	12.3	6.3	4.4	4.0	4.2	4.5
Total 'hired' workers per farm	1.0	2.5	6.9	16.2	47.1	7.3

(1) Women's Land Army and Prisoners of War.

(2) Including allowance for manual work of farmer and wife.

NUMBERS OF WORKERS ON PREDOMINANTLY ARABLE WITH SOME LIVESTOCK
(GROUP 5) FARMS OF EACH SIZE.

Type of labour	Size of farm—adjusted acres					Per 100 acres
	5— 24.9	25— 99.9	100— 299.9	300— 699.9	700 and over	
Regular —male	2.6	2.0	2.0	2.3	2.8	2.2
—female	1.9	.2	.3	.3	.5	.3
—Total	4.5	2.2	2.3	2.6	3.3	2.5
Casual —male	1.3	.6	.4	.3	.2	.4
—female	—	.3	.3	.3	.3	.3
Other(1)	—	.8	.6	.6	.6	.6
Total casual and other	1.3	1.7	1.3	1.2	1.1	1.3
All 'hired' workers	5.8	3.9	3.6	3.8	4.4	3.8
Persons available(2)	11.6	5.8	4.2	4.1	4.5	4.6
Total 'hired' workers per farm	1.0	2.1	6.1	14.5	48.5	5.1

(1) Women's Land Army and Prisoners of War.

(2) Including allowance for manual labour of farmer and wife.

The acreage of land per person available varied from less than 10 on farms of below 25 acres to between 20 and 25 acres per person on the larger farms.

Land Utilisation.

The importance of Predominantly Arable farms as producers of sale crops has already been noticed in Chapter IV (Table 16). One third of the wheat and barley, one half of the potatoes and sugar beet and nearly one half of the fruit, vegetables and flowers grown in the Province were on these farms. The most significant point is, perhaps that the total acreage of fruit, flowers and vegetables⁽¹⁾ is roughly four and a half times as great as that grown by specialist market gardeners.

Tables 57(A) and 57(B) show how these overall production achievements influence the pattern of land utilisation on these farms. Many variations within the Province are probably concealed by the averages but the position is, roughly speaking, that Predominantly Arable farms have one third of their acreage under wheat and barley and provide one third of the provincial acreage of these crops. For potatoes and sugar beet and for vegetables the position is rather different. Although Groups 4 and 5 contained 50 per cent of the total provincial potato and sugar beet acreage, only about 20 out of every 100 acres on these farms was devoted to these crops. Similarly with vegetables for human consumption less than 10 per cent of the farm acreage was used to provide 47 per cent of the provincial acreage of vegetables.

The average size of the Predominantly Arable farms (Group 4) was 185 acres. Three quarters of this acreage was under tillage crops, and 64 per cent carried crops for sale. The percentage of tillage and of crops for sale declined slowly as farm size increased. The proportion under arable cultivation was more constant than the proportion of tillage because the larger farms had proportionately more land under temporary grass. The cropping pattern was very uniform on farms of more than 25 acres but below this size, more land was devoted to potatoes, sugar beet and vegetables and less to cereals.

Predominantly Arable farms with some livestock (Group 5) averaged only 132 acres with only just over two thirds of the land under tillage crops. The proportion of land under temporary grass was almost identical in the two type groups, but the farms with

(1) Including peas for harvesting dry.

some livestock had more permanent grass. Farms of under 25 acres had a much higher proportion of land under potatoes than larger farms. They were very different in their choice of crops from the under 25 acre farms in Group 4. In the remaining four sizes of farm groups the emphasis placed on the various crops was very similar on both types of farm, the only real difference being that Group 4 had slightly more of each type per 100 acres.

LAND UTILISATION ON PREDOMINANTLY ARABLE (GROUP 4) FARMS OF EACH SIZE.

TABLE 57(A).

Crop	Size of farm—adjusted acres					Per 100 acres East Midlands
	5— 24.9	25— 99.9	100— 299.9	300— 699.9	700 and over	
Wheat	6.9	18.8	16.0	16.6	15.5	16.4
Barley	10.8	12.6	18.2	17.6	18.0	17.3
Oats	4.8	7.6	5.6	5.3	4.1	5.4
Potatoes	27.4	18.6	15.2	12.8	13.0	14.5
Sugar beet	14.1	6.4	5.9	6.1	6.0	6.0
Fruit, vegetables and flowers	18.5	9.8	8.8	9.9	9.5	9.5
Other crops	4.1	7.3	7.3	7.2	8.2	7.4
Total tillage	86.6	81.1	77.0	75.5	74.3	76.5
Temporary grass	2.4	6.4	9.3	11.2	13.4	10.3
Total arable	89.0	87.5	86.3	86.7	87.7	86.8
Permanent grass	11.0	12.5	13.7	13.3	12.3	13.2
Total crops and grass	100.0	100.0	100.0	100.0	100.0	100.0
Average size (acres)						
—crops and grass	16.2	55.8	182.4	421.6	1,148.6	184.8
—rough grazing	—	.5	2.2	6.2	7.1	2.1

LAND UTILISATION ON PREDOMINANTLY ARABLE WITH SOME LIVESTOCK (GROUP 5)

FARMS OF EACH SIZE.

TABLE 57(B).

Crop	Size of farm—adjusted acres					Per 100 acres East Midlands
	5— 24.9	25— 99.9	100— 299.9	300— 699.9	700 and over	
Wheat	14.7	12.6	16.5	14.7	13.2	14.9
Barley	8.4	13.7	15.2	17.6	18.4	15.9
Oats	8.6	8.0	5.5	4.2	3.9	5.4
Potatoes	23.2	15.5	10.9	10.5	9.4	11.6
Sugar beet	6.1	7.9	5.1	6.1	5.9	5.9
Fruit, flowers and vegetables	5.0	9.3	7.8	6.5	9.2	7.8
Other crops	6.7	5.3	5.7	6.0	6.1	5.8
Total tillage	72.7	72.3	66.7	65.6	66.1	67.3
Temporary grass	1.3	7.4	10.3	12.5	15.3	10.9
Total arable	74.0	79.7	77.0	78.1	81.4	78.2
Permanent grass	26.0	20.3	23.0	21.9	18.6	21.8
Total crops and grass	100.0	100.0	100.0	100.0	100.0	100.0
Average size (acres)						
—crops and grass	17.2	52.3	172.1	386.2	1,109.4	131.8
—rough grazing	.2	.4	1.3	5.2	1.8	1.1

Livestock Carry.

Financial results from Predominantly Arable farms suggest that between 20 and 25 per cent of the net production of these farms consists of livestock and livestock products. In the East Midlands these two farming types accounted for 21 per cent of all pigs and 15 per cent of all 'other' cattle over two years old. Sheep at 13 per cent were the next most important class of stock carried.

Predominantly Arable farms (Group 4) carried on average roughly one livestock unit per 10 acres of crops and grass. Farms of under 25 acres had livestock carry about one third greater in intensity than the remaining size groups and relied more on pigs and poultry. One horse was carried on nearly all of these small farms and about one and a half acres of permanent grass were available for its use. Were it not for the presence of horses much of the permanent grass on these holdings could probably be brought into the rotation. The carry of cattle averaged less than one beast per holding and undoubtedly many holdings were without cattle. The average carry of pigs and poultry per holding was roughly two pigs and 70 poultry. On the larger farms in this group, the total carry of cattle remained fairly constant per 100 acres, and this was also true of the class of cattle carried. In the whole group 26 per cent of the total were breeding cattle, 42 per cent steers and 32 per cent heifers. As farm size increased cattle formed a greater proportion of the total livestock. Sheep were also of more importance and it was noticeable that farms of less than 100 acres had relatively more breeding sheep than the larger farms.

The detailed figures (Table 58A) of the number of cattle in the various age groups show that the number of cows and heifers in calf and cows in milk is barely enough to provide replacements even at the lower ages. There were twice as many steers of two years old and over as of yearlings. This suggests that at least half of the fattening cattle were bought in. In practice, many farms buy in all their cattle but others breed and rear and probably buy in a few to fill their yards. Some of the cows may be kept to provide milk for domestic consumption and others for rearing calves. More heifers are carried than are required for herd maintenance and many of these are fattened with the steers.

The livestock carry on Predominantly Arable farms with some livestock (Group 5) was heavier—one livestock unit per four acres. Many of the points noticed on Group 4 farms appear also in Group 5. These were :—the much higher density of stocking on

farms of less than 25 acres; the greater reliance on cattle and sheep on the larger farms and the higher proportion of breeding sheep on farms of less than 100 acres.

As farm size increases the proportion of cows and heifers in milk and in calf to total cattle declines. This tendency was most marked in the two dairy farm types (Groups 1 and 2), but it is also clear in both Groups 4 and 5.

LIVESTOCK CARRY ON PREDOMINANTLY ARABLE (GROUP 4) FARMS OF EACH SIZE.

TABLE 58(A).

Per 100 acres

Type of stock	Size of farm—adjusted acres					East Midlands
	5—24.9	25—99.9	100—299.9	300—699.9	700 & over	
Cows and heifers in milk	.7	1.5	1.5	1.4	1.5	1.4
Cows in calf, but not in milk	—	.3	.4	.5	.4	.4
Heifers in calf, with first calf	—	.5	.5	.5	.6	.5
Bulls	—	.1	.1	.1	.2	.1
Other cattle :—						
2 years old and over M	—	.2	1.9	2.7	2.0	2.0
" " " F	—	.6	1.2	.8	.8	.9
1 year old and under 2 M	1.2	1.0	1.1	1.1	.8	1.0
" " " F	1.2	1.2	1.0	1.0	.9	1.0
Under 1 year old M	.6	.9	1.0	.9	.9	.9
" " " F	.6	.9	.9	1.0	1.0	1.0
Total cattle	4.3	7.2	9.6	10.0	9.1	9.2
Breeding pigs	1.2	.8	.5	.4	.3	.5
Total pigs	11.1	5.7	3.1	3.4	2.2	3.4
Breeding sheep	—	.9	2.3	5.3	5.4	3.7
Total sheep	—	1.5	6.4	14.4	13.2	9.7
Work horses	4.9	2.4	1.3	1.2	1.0	1.4
Fowls over 6 months	255.1	70.9	29.2	13.0	5.5	25.7
Total poultry	446.8	137.7	59.9	29.3	13.5	53.6
Total livestock units	13.3	9.7	10.4	11.5	10.1	10.6

LIVESTOCK CARRY ON PREDOMINANTLY ARABLE WITH SOME LIVESTOCK (GROUP 5)
FARMS OF EACH SIZE.

TABLE 58(B).

Per 100 acres

Type of Stock	Size of farm—adjusted acres					East Midlands
	5—24.9	25—99.9	100—299.9	300—699.9	700 & over	
Cows and heifers in milk	7.1	5.1	2.8	2.9	2.8	3.3
Cows in calf, but not in milk	.6	.8	1.1	.7	.9	.9
Heifers in calf, with first calf	.7	.9	2.3	1.6	1.5	1.7
Bulls	—	.3	.2	.3	.2	.3
Other cattle :—						
2 years old and over M	1.3	3.7	5.5	5.5	3.0	4.8
" " " F	3.2	3.2	3.5	2.1	1.8	2.8
1 year old and under 2 M	3.2	2.9	2.5	2.7	2.6	2.6
" " " F	3.2	3.3	3.0	3.2	2.2	3.0
Under 1 year old M	3.9	3.1	2.0	2.7	1.6	2.4
" " " F	7.1	2.9	1.9	2.3	1.7	2.3
Total cattle	30.3	26.2	24.8	24.0	18.3	24.1
Breeding pigs	9.0	1.2	.8	.6	1.4	1.1
Total pigs	42.6	6.7	3.3	4.0	11.3	6.2
Breeding sheep	—	.7	5.9	11.4	17.6	8.1
Total sheep	—	1.5	16.5	29.7	43.9	21.4
Work horses	4.5	3.8	1.7	.9	.9	1.8
Fowls over 6 months	505.2	193.3	50.1	25.5	23.5	72.8
Total poultry	1001.3	398.6	118.9	60.0	47.7	157.3
Total livestock units	40.4	28.0	24.9	23.5	22.2	25.1

Distribution of Tractors.

Since 1947 farm mechanisation has proceeded apace. Table 59 shows that in June, 1947 many farms in both type groups were operating without tractors and many more with only one tractor. Some of the large farms recording no tractors were probably attached to other farms and dependent on them for much of their mechanical power.

PERCENTAGE OF PREDOMINANTLY ARABLE (GROUP 4) AND PREDOMINANTLY ARABLE WITH SOME LIVESTOCK (GROUP 5) FARMS WITH VARIOUS NUMBERS OF TRACTORS (EXCLUDING ONE AND TWO WHEELED TRACTORS) BY SIZE GROUPS.

TABLE 59.

Tractors per farm	Size of farm—adjusted acres										East Midlands	
	5—24.9		25—99.9		100—299.9		300—699.9		700 and over			
	4	5	4	5	4	5	4	5	4	5	4	5
0.	60	78	28	22	8	11	4	—	1	—	20	27
1.	30	22	59	53	23	27	3	7	—	7	34	34
2.	—	—	11	22	43	43	20	29	1	—	23	24
3.	10	—	—	—	19	14	36	28	1	—	13	7
4.	—	—	—	3	3	5	27	19	10	14	5	5
5.	—	—	—	—	2	—	9	7	21	14	2	1
6.	—	—	—	—	—	—	1	5	13	29	—	—
7 or more	—	—	—	—	2	—	—	5	53	36	2	1
Total	100	100	100	100	100	100	100	100	100	100	100	100

CHAPTER IX.

CROPPING WITH LIVESTOCK FARMS.

Group 6—Cropping with Livestock of Some Importance.

Group 7—Cropping with Livestock of Considerable Importance.

Just over one fifth (21 per cent) of the full-time farms of the Province were classified as Cropping with Livestock farms.⁽¹⁾ Only farms with between 25 and 50 per cent of their crops and grass under sale crops and with less than 10 dairy cows per 100 acres were placed in this category. A further subdivision was based on the livestock carry per 100 acres: all farms with less than 25 livestock units per 100 acres falling into Group 6—Cropping with Livestock of Some Importance and the remainder into Group 7—Cropping with Livestock of Considerable Importance. It can be seen from Table 60 that roughly 60 per cent fell into Group 6 and 40 per cent into Group 7.

Cropping with Livestock farms had 31 per cent of the crops and grass of the full-time farms of the Province but they grew 38 per cent of the wheat and barley, 27 per cent of the potatoes and sugar beet and 28 per cent of the fruit and vegetables for human consumption.⁽²⁾ Forty-seven per cent of all the sheep in the Province were on these farms and 34 per cent of 'other' cattle over two years of age. These would be mainly cattle for fattening.

**CROPPING WITH LIVESTOCK FARMS: WITH LIVESTOCK OF SOME IMPORTANCE
(GROUP 6) AND WITH LIVESTOCK OF CONSIDERABLE IMPORTANCE (GROUP 7)
IN EACH COUNTY IN EACH SIZE GROUP.**

Size group— adjusted acres	Numbers													
	Nottingham		Leic- ester		Derby		Lindsey		Kesteven		Rut- land		East Midlands	
	6	7	6	7	6	7	6	7	6	7	6	7	6	7
1. 1—4.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2. 5—24.9	—	40	—	—	—	—	20	20	—	—	1	1	21	61
3. 25—49.9	30	30	10	20	10	10	210	100	—	30	3	1	263	191
50—74.9	10	100	10	30	10	10	150	90	—	50	3	10	183	290
75—99.9	60	60	40	10	—	10	170	80	10	20	5	5	285	185
4. 100—149.9	96	56	44	48	—	20	200	96	72	20	16	10	428	250
150—199.9	60	60	24	36	16	8	156	64	64	16	9	15	329	199
200—249.9	80	36	20	36	12	4	120	28	32	28	10	10	274	142
250—299.9	28	28	8	12	—	—	80	28	40	16	10	3	166	87
5. 300—699.9	76	56	30	40	—	2	246	102	80	30	20	14	452	244
6. 700 and over	4	3	2	1	—	—	36	7	8	4	4	1	54	16
All sizes	444	469	188	233	48	64	1388	615	306	214	81	70	2,455	1,665

(1) The term 'Cropping with Livestock' will be applied to Groups 6 and 7 jointly unless the context indicates the contrary.

(2) Including peas for harvesting dry.

The general impression conveyed by Table 60 is of the large average size of Cropping with Livestock farms. Very few were below 25 acres in size—the modal group being between 100 and 150 acres for farms in Group 6 and between 50 and 75 acres in Group 7. Compared with the Predominantly Arable groups relatively fewer farms were over 700 acres in size but many more fell within the 300 to 700 acre limits. These big farms were found mainly in Lindsey but Nottingham also contributed a good proportion.

Employment of Labour.

The percentage of Cropping with Livestock farms with various numbers of regular workers is shown in Table 61. The greater average size of farms with Livestock of Some Importance (Group 6) is shown by the lower proportion with no workers and the higher proportion with 11 or more workers. But even in this group, the proportion with regular worker teams of this size was lower than in the Predominantly Arable farm groups.

PERCENTAGE OF CROPPING FARMS—
GROUP 6 WITH LIVESTOCK OF SOME IMPORTANCE
GROUP 7 WITH LIVESTOCK OF CONSIDERABLE IMPORTANCE
WITH VARIOUS NUMBERS OF REGULAR WORKERS.

TABLE 61.

Number of regular workers per farm	Size of farm—adjusted acres										East Midlands	
	5—24.9		25—99.9		100—299.9		300—699.9		700 and over			
	6	7	6	7	6	7	6	7	6	7	6	7
0.	5	34	39	46	7	5	1	1	—	—	15	22
1.	95	33	36	32	18	16	—	2	—	—	20	21
2.	—	33	22	19	21	22	5	3	—	—	18	18
3.	—	—	1	3	26	23	8	5	—	—	15	11
4.	—	—	—	—	14	17	12	9	—	—	9	8
5.	—	—	—	—	6	7	10	10	—	—	5	4
6.	—	—	—	—	3	6	12	19	—	6	4	5
7.	—	—	—	—	2	2	16	17	4	—	4	4
8.	—	—	—	—	1	1	7	10	4	—	2	2
9.	—	—	—	—	—	1	10	4	—	6	2	1
10.	—	—	—	—	—	1	6	4	11	6	2	1
11 or more	—	—	—	—	—	13	16	81	82	4	4	3
All Groups	100	100	100	100	100	100	100	100	100	100	100	100

In Tables 62(A) and 62(B) the detailed composition of the labour force on farms of each size is illustrated. The small number of farms in the 5 to 24.9 acres group makes it necessary to treat the figures relating to this size group with considerable caution. (The total number of farms in the sample was only six, two of these, being from Rutland, were not 'raised').

The most interesting feature of these two tables is the fact that they show the intensity of labour use per 100 acres to be little

more than half that on Predominantly Arable farms and approximately the same as on Dairy farms. As on Predominantly Arable farms the smaller farms relied more on casual labour, but on average, Cropping with Livestock farms used less casual labour (29-30 per cent of hired workers) and proportionately only about half as much female labour. The same tendency appeared for farms of over 700 acres to have more labour per 100 acres. This was so whether 'hired' workers or persons available were taken as a measure.

**NUMBERS OF WORKERS ON CROPPING WITH LIVESTOCK OF SOME IMPORTANCE
(GROUP 6) FARMS OF EACH SIZE.**

TABLE 62(A).

Type of labour	Size of farm—adjusted acres					Per 100 acres East Midlands
	5— 24.9	25— 99.9	100— 299.9	300— 699.9	700 and over	
Regular —male	3.9	1.6	1.4	1.5	1.9	1.5
	—	0.1	0.1	0.1	0.1	0.1
	—Total	3.9	1.7	1.5	1.6	2.0
Casual —male	3.9	0.8	0.2	0.2	0.1	0.3
	—	0.3	0.1	0.1	0.1	0.1
Other(1)	—	0.1	0.4	0.4	0.4	0.4
	Total casual and other	3.9	1.2	0.7	0.7	0.8
All 'hired' workers	7.8	2.9	2.2	2.3	2.6	2.4
Persons available(2)	11.9	4.5	2.8	2.5	2.7	2.9
Total 'hired' workers per farm	2.0	1.8	4.1	9.8	27.5	4.9

(1) Women's Land Army and Prisoners of War.

(2) Including allowance for manual work of farmer and wife.

**NUMBER OF WORKERS ON CROPPING WITH LIVESTOCK OF CONSIDERABLE IMPORTANCE
(GROUP 7) FARMS OF EACH SIZE.**

TABLE 62(B).

Type of labour	Size of farm—adjusted acres					Per 100 acres East Midlands
	5— 24.9	25— 99.9	100— 299.9	300— 699.9	700 and over	
Regular —male	5.1	1.1	1.6	1.7	2.0	1.6
	—	0.2	0.1	0.1	0.1	0.1
	—Total	5.1	1.3	1.7	1.8	2.1
Casual —male	—	0.2	0.2	0.1	0.1	0.2
	—female	—	0.1	0.1	0.2	0.1
Other(1)	—	0.4	0.4	0.4	0.2	0.4
	Total casual and other	5.1	0.6	0.7	0.6	0.7
All 'hired' workers	5.1	1.9	2.4	2.4	2.6	2.4
Persons available(2)	10.3	3.5	3.0	2.6	2.7	3.0
Total 'hired' workers per farm	1.0	1.2	4.3	10.0	22.4	3.9

(1) Women's Land Army and Prisoners of War.

(2) Including allowance for manual work of farmer and wife.

Land Utilisation.

The farms of Group 6 (Cropping Farms with Livestock of Some Importance) were bigger in size than those of any other type group. The average for the Province was 210 acres but in Kesteven and Rutland it was as much as 282 acres. Of every 100 acres, 58 were devoted to tillage crops, 13 to temporary grass and 29 to permanent grass. About 38 acres per 100 or 66 per cent of the total tillage was under sale crops. Because of their small number no valid conclusions can be drawn about farms of less than 25 acres. Farms in the various sizes groups above 25 acres had almost the same proportion of land under tillage. As farm size increased the acreage under barley grew at the expense of oats and potatoes. The larger farms had a slightly higher proportion of temporary grass and less permanent grass.

LAND UTILISATION ON CROPPING WITH LIVESTOCK OF SOME IMPORTANCE
(GROUP 6) FARMS OF EACH SIZE.

TABLE 63(A).

Crop	Size of farm—adjusted acres					Per 100 acres East Midlands
	5— 24.9	25— 99.9	100— 299.9	300— 699.9	700 and over	
Wheat	—	12.4	14.6	13.7	11.7	13.7
Barley	—	9.2	11.6	14.5	16.2	13.0
Oats	23.6	9.5	6.9	5.5	5.5	6.5
Potatoes	19.7	6.7	5.1	4.5	4.4	4.9
Sugar beet	7.8	3.0	2.4	2.6	2.3	2.5
Fruit, flowers and vegetables	1.2	4.8	3.9	3.9	3.6	4.0
Other crops	34.0	13.3	12.6	13.0	14.5	13.1
Total tillage	86.3	58.9	57.1	57.7	58.2	57.7
Temporary grass	—	10.8	12.4	14.4	16.3	13.4
Total arable	86.3	69.7	69.5	72.1	74.5	71.1
Permanent grass	13.7	30.3	30.5	27.9	25.5	28.9
Total crops and grass	100.0	100.0	100.0	100.0	100.0	100.0
Average size (acres)						
—crops and grass	24.2	61.6	180.8	431.6	1,066.3	209.6
—rough grazing	—	1.4	1.8	5.2	3.9	2.3

On the average, equal acreages of wheat and barley and twice as many acres of potatoes as sugar beet were grown. But on the smaller farms, more emphasis was put on oats and potatoes.

Cropping Farms with Livestock of Considerable Importance (Group 7) were much smaller in size; averaging 167 acres. Half this acreage was under tillage crops and just over one third under crops for sale. Compared with Group 6, Group 7 farms had the same proportion of temporary grass but a higher proportion of permanent grass. Small farms tend to have a higher proportion of permanent grass than big farms and this fact may explain the difference between these two groups.

LAND UTILISATION ON CROPPING WITH LIVESTOCK OF CONSIDERABLE IMPORTANCE
(GROUP 7) FARMS OF EACH SIZE.

TABLE 63(B).

Crop	Size of farm—adjusted acres					Per 100 acres East Midlands
	5— 24.9	25— 99.9	100— 299.9	300— 699.9	700 and over	
Wheat	3.4	14.1	14.7	13.3	13.7	14.0
Barley	2.5	8.0	9.8	11.5	9.9	10.1
Oats	3.8	7.4	6.0	5.3	4.8	5.9
Potatoes	2.1	5.0	4.2	4.4	4.3	4.4
Sugar beet	0.3	3.0	2.3	3.0	3.1	2.7
Fruit, flowers and vegetables	20.1	4.2	3.5	3.2	4.1	3.6
Other crops	3.8	7.4	9.5	9.6	8.5	9.1
Total tillage	36.0	49.1	50.0	50.3	48.4	49.8
Temporary grass	—	11.5	13.1	14.6	15.6	13.5
Total arable	36.0	60.6	63.1	64.9	64.0	63.3
Permanent grass	64.0	39.4	36.9	35.1	36.0	36.7
Total crops and grass	100.0	100.0	100.0	100.0	100.0	100.0
Average size (acres)						
—crops and grass	19.4	61.9	177.9	411.8	862.8	166.6
—rough grazing	—	.9	1.5	10.4	8.4	2.6

Wheat was clearly the most common tillage crop followed by barley. Very little difference was to be seen in the cropping pattern of the four size of farm groups above 25 acres.

An interesting point emerges from the land utilisation figures relating to Groups 4, 5, 6 and 7. It is that sale crops as a proportion of tillage are the same or slightly higher on the farms with the most livestock. Very little difference could be noted between small and large farms in the proportion of tillage devoted to sale crops except that it was slightly higher on small farms in Group 4.

SALE CROPS AS A PROPORTION OF TILLAGE CROPS.

TABLE 64.

Group	Tillage per 100 acres	Sale crops per 100 acres	Sale crops per cent of tillage crop
4. Predominantly arable	76.5	63.7	83.2
5. Predominantly arable with some livestock	67.3	56.1	83.4
6. Cropping with livestock of some importance	57.7	38.1	66.0
7. Cropping with livestock of considerable importance	49.8	34.8	69.9

Three factors in combination probably explain this apparent anomaly. Farms with livestock generally have more land under permanent grass, they may also buy some feeding stuffs for their stock and it may also be that their 'sale' crops and particularly wheat and barley are not in fact all sold, part being retained for livestock feeding. Information on this point is available in some financial accounts but not in the Agricultural Returns.

Livestock Carry.

It would be natural to expect Cropping with Livestock farms to maintain a moderate density of stocking and it is worth noting (Table 65(A)), that the actual number of livestock per 100 acres

LIVESTOCK CARRY ON CROPPING WITH LIVESTOCK OF SOME IMPORTANCE
(GROUP 6) FARMS OF EACH SIZE.

TABLE 65(A).

Type of Stock	Size of farm—adjusted acres					Per 100 acres East Midlands
	5—24.9	25—99.9	100—299.9	300—699.9	700 & over	
Cows and heifers in milk	4.1	3.7	3.3	3.7	2.3	3.0
Cows in calf, but not in milk	0.2	1.0	0.9	0.8	0.9	0.9
Heifers in calf, with first calf	—	0.9	1.2	1.2	1.0	1.1
Bulls	—	0.2	0.3	0.2	0.3	0.3
Other cattle :—						
2 years old and over	M	—	1.1	2.0	2.6	2.2
F	—	—	1.7	2.1	1.5	1.7
1 year old and under 2	M	—	1.8	1.9	1.7	1.4
F	3.9	—	2.2	2.8	2.0	1.8
Under 1 year old	M	—	1.2	1.7	1.5	1.5
F	0.6	—	1.7	2.2	1.7	1.4
Total cattle	8.8	15.5	18.4	15.9	13.6	16.7
Breeding pigs	7.9	0.4	0.4	0.4	0.5	0.4
Total pigs	15.7	3.4	2.4	2.0	3.4	2.5
Breeding sheep	—	3.7	6.1	13.7	19.5	10.3
Total sheep	—	9.1	17.0	35.5	51.0	27.1
Work horses	7.9	2.5	1.3	1.0	0.8	1.3
Fowls over 6 months	15.7	80.4	35.2	20.2	5.8	30.2
Total poultry	15.7	179.1	73.5	44.5	16.0	65.3
Total livestock units	16.7	17.5	18.0	18.1	18.3	18.1

was lower on Cropping farms with Livestock of some importance (Group 6) than on Predominantly Arable farms with some livestock (Group 5). This was so despite the allocation of more land to feed as opposed to sale crops. The explanation may be poorer land and poorer crop yields, more self-sufficiency in animal feeding stuffs or different management but the importance of these various factors cannot be assessed at this stage. Group 6 farms carried fewer stock of all types (except sheep) per 100 acres than those of Group 5. Of the total herd 42 per cent were heifers, 33 per cent steers and 25 per cent cows and bulls. The age distribution of the cattle suggests that there were enough cows to replace the under one year old cattle but that some older cattle are bought in. This, of course, is the average position, the policy actually followed will vary from farm to farm.

Cropping farms with Livestock of Considerable Importance (Group 7) had on average 31 livestock units per 100 acres (Table 65B). There were more livestock of every class per 100 acres than in Group 6. The distribution of the cattle stock was 43 per cent heifers, 37 per

cent steers and 20 per cent breeding stock. It is clear from the age distribution of the cattle that considerable numbers of cattle over one year were bought in. This was particularly true of steers above two years old ; at least one half and possibly two thirds of these must have been purchased.

It is clear that in Groups 4, 5, 6 and 7 there are ample heifers for herd replacement. This means that the breeding herd is kept very young or that many heifers are fattened either directly or after

**LIVESTOCK CARRY ON CROPPING WITH LIVESTOCK OF CONSIDERABLE IMPORTANCE
(GROUP 7) FARMS OF EACH SIZE.**

TABLE 65(B).

Type of Stock	Size of farm—adjusted acres					Per 100 acres East Midlands
	5—24.9	25—99.9	100—299.9	300—699.9	700 & over	
Cows and Heifers in milk	6.8	5.4	4.6	3.0	3.3	4.1
Cows in calf, but not in milk	—	1.8	1.5	1.0	0.7	1.3
Heifers in calf, with first calf	5.3	1.8	3.0	1.8	1.5	2.3
Bulls	—	0.2	0.5	0.3	0.3	0.4
Other cattle :—						
2 years old and over M	23.7	3.5	4.4	8.9	6.2	6.0
" " " F	—	4.9	4.5	4.0	3.1	4.3
1 year old and under 2 M	—	2.8	2.3	2.2	2.8	2.4
" " " F	0.2	3.7	3.4	2.3	2.5	3.0
Under 1 year old M	8.5	3.0	2.6	1.7	1.9	2.3
" " " F	5.1	3.5	3.4	2.0	2.3	2.9
Total cattle	49.6	30.6	30.2	27.2	24.6	29.0
Breeding pigs	3.4	0.7	0.5	0.4	0.6	0.5
Total pigs	25.4	3.8	3.4	3.1	3.5	3.4
Breeding sheep	0.5	8.4	15.7	20.3	18.3	16.3
Total sheep	1.2	20.9	41.2	55.1	58.6	43.9
Work horses	1.7	2.6	1.5	1.1	1.1	1.5
Fowls over 6 months	146.6	92.9	40.7	1.7	16.8	39.1
Total poultry	363.4	221.1	99.0	38.9	41.0	93.6
Total livestock units	49.5	31.0	31.5	31.3	28.5	31.3

their first calving. This is probably the more usual practice. Beef breeding herds usually consist of mature cows that have proved themselves capable of producing good calves and rearing them well.

The other consistent feature of all these four groups is the relatively uniform density of livestock carry on farms in all size groups above 25 acres and the diminishing importance of pigs and poultry.

Distribution of Tractors.

The distribution of tractors at January, 1948 is shown in Table 66.

PERCENTAGE OF CROPPING WITH LIVESTOCK OF SOME IMPORTANCE (GROUP 6)
 AND OF CROPPING WITH LIVESTOCK OF CONSIDERABLE IMPORTANCE (GROUP 7)
 FARMS WITH VARIOUS NUMBERS OF TRACTORS (EXCLUDING ONE AND TWO
 WHEELED TRACTORS) BY SIZE GROUPS.

TABLE 66.

TRACTORS PER FARM	SIZE OF FARM—ADJUSTED ACRES										EAST MIDLANDS	
	5—24.9		25—99.9		100—299.9		300—699.9		700 AND OVER		6	7
	6	7	6	7	6	7	6	7	6	7		
0.	95	34	36	56	12	14	5	4	—	—	18	30
1.	5	66	54	38	37	45	7	7	4	—	36	37
2.	—	—	10	6	39	29	33	31	4	—	28	18
3.	—	—	—	—	9	10	33	47	11	6	11	11
4.	—	—	—	—	2	2	16	5	20	31	4	2
5.	—	—	—	—	1	—	2	4	17	19	1	1
6.	—	—	—	—	—	—	2	1	13	—	1	—
7 OR MORE	—	—	—	—	—	—	2	1	31	44	1	1
ALL GROUPS	100	100	100	100	100	100	100	100	100	100	100	100

CHAPTER X.

GROUP 8. LIVESTOCK FARMS.

This is perhaps the type of farm group that is most heterogeneous. It contains some of the best bullock fattening farms in the Province, at one extreme, and at the other the true hill sheep farms of the Derbyshire hills. Some of the land is capable of fattening a bullock to the acre but some is rough grazing requiring several acres per ewe. But all the farms have in common a very high degree of dependence on livestock other than dairy cows and the fact of having less than 25 per cent of their crops and grass devoted to crops for sale. The majority of livestock farms possess another common feature—they are the most dependent on farms of other types. They rely on other farmers to buy their stores or to provide them with store cattle or sheep. During the war they were often at a disadvantage because the prices of store animals were uncontrolled and the prices of fat animals were controlled at comparatively unfavourable levels.

Because Livestock farms vary so much in type the group as a whole can only be described in rather general terms. Further subdivision is essential for any more detailed study. There are the true graziers, who buy in nearly all the stores they fatten. Then there are those who breed and rear and possibly fatten a few. Others breed and/or rear dairy herd replacements. Finally, there are the hill sheep farmers who rely mainly on the sale of store sheep and wool. These are the four main types; clearly they merge one into the other and it would be difficult to draw hard and fast lines of demarcation.

It is estimated that 12 per cent of the full-time farms of the Province were Livestock farms. In Rutland, 35 per cent of farms were so classified and in Leicestershire 20 per cent. Leicestershire and Lindsey together had 54 per cent of the group total, and Nottinghamshire and Derbyshire had just under one fifth each (17 and 18 per cent respectively). As a group, Livestock farms were distinguished by having 23 per cent of the 'other cattle over two years old' and 23 per cent of all the sheep in the Province.

It can be seen from Table 67 that the modal size of this type of farm in the Province lies between 25 and 50 acres of crops and grass. Much of the rough grazing in the area is on Livestock farms particularly in Derbyshire. This fact must be considered in relation to

LIVESTOCK FARMS IN EACH COUNTY IN EACH SIZE GROUP

TABLE 67.

Size group—adjusted acres	Nottingham	Leic-ester	Derby	Lindsey	Kesteven	Rut-land	Numbers
							East Midlands
1. 1—4.9	—	—	—	—	—	—	—
2. 5—24.9	60	20	160	140	20	5	405
3. 25—49.9	70	100	80	140	20	24	434
50—74.9	80	130	60	80	—	26	376
75—99.9	10	90	10	50	30	16	206
4. 100—149.9	84	128	40	84	12	30	378
150—199.9	52	88	32	40	—	13	225
200—249.9	20	60	20	16	4	14	134
250—299.9	4	32	—	8	12	6	62
5. 300—699.9	34	44	12	22	12	13	137
6. 700 and over	1	7	5	5	2	2	22
All sizes	415	699	419	585	112	149	2,379

the distribution shown in the table, which suggests that the smallest farms in terms of crops and grass, were in Derbyshire and Lindsey. In fact, the Livestock farms of Derbyshire had attached to them an average of 132 acres of rough grazing.

Employment of Labour.

NUMBER AND PERCENTAGE OF LIVESTOCK FARMS WITH VARIOUS NUMBERS OF REGULAR WORKERS.

TABLE 68.

Number of regular workers per farm	Size of farm—adjusted acres										East Midlands	
	5—24.9		25—99.9		100—299.9		300—699.9		700 and over			
	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
0.	345	85	530	52	114	14	2	2	2	9	993	42
1.	40	10	398	39	188	23	10	7	—	—	636	27
2.	20	5	84	9	222	28	11	8	—	—	337	14
3.	—	—	3	†	149	19	24	18	—	—	176	7
4.	—	—	1	†	84	10	16	12	—	—	101	4
5.	—	—	—	—	37	5	27	20	—	—	64	3
6.	—	—	—	—	1	†	14	10	1	5	16	1
7.	—	—	—	—	—	—	11	8	1	5	12	†
8.	—	—	—	—	—	—	10	7	4	17	14	†
9.	—	—	—	—	—	—	6	4	1	5	7	†
10.	—	—	—	—	—	—	—	—	12	54	22	†
11 or more	—	—	—	—	4	1	6	4	12	54	22	†
Total	405	100	1,016	100	799	100	137	100	22	100	2,379	100

† Less than 0.5 per cent.

An impression of the size of farm and of the small size of the labour force may be obtained from Table 68. Just over 40 per cent of livestock farms had no regular workers and roughly a further quarter employed only one regular person. The average number of 'hired' workers per 100 acres (Table 69) was 2.2—the lowest level of employment of any type group.

TABLE 69. NUMBERS OF WORKERS ON LIVESTOCK FARMS OF EACH SIZE.
Per 100 acres

Type of labour	Size of farm—adjusted acres					East Midlands
	5— 24.9	25— 99.9	100— 299.9	300— 699.9	700 and over	
Regular —male	.9	.9	1.2	1.2	1.7	1.2
—female	.3	.1	.1	.1	.1	.1
—Total	1.2	1.0	1.3	1.3	1.8	1.3
Casual —male	1.7	.4	.2	.1	.1	.2
—female	—	.2	—	—	—	.1
Other(1)	—	.4	.4	.5	.3	.4
Total casual and other	1.7	1.0	.6	.6	.4	.7
All 'hired' workers	2.9	2.0	1.9	1.9	2.2	2.0
Persons available(2)	8.8	3.8	2.5	2.2	2.3	2.9
Total 'hired' workers per farm	0.3	1.1	3.0	7.3	20.1	2.2

(1) Women's Land Army and Prisoners of War.

(2) Including allowance for manual work of farmer and wife.

The table also provides evidence of the constant level of 'hired' employment per 100 acres on farms between 25 and 700 acres and of the increased labour force per 100 acres on farms of over 700 acres.

Land Utilisation.

On average, Livestock farms devoted 33 per cent of their crops and grassland to tillage, 12 per cent to temporary grass and 55 per cent to permanent grass (Table 70). Wheat was the most important single crop but clearly this was true only on average and not of all parts of the Province.

TABLE 70. LAND UTILISATION ON LIVESTOCK FARMS OF EACH SIZE.
Per 100 acres

Crop	Size of farm—adjusted acres					East Midlands
	5— 24.9	25— 99.9	100— 299.9	300— 699.9	700 and over	
Wheat	1.6	7.9	9.2	8.9	9.0	8.7
Barley	1.3	3.1	3.9	5.0	5.3	4.0
Oats	6.2	6.8	6.4	7.0	5.5	6.5
Potatoes	2.3	1.6	1.7	2.0	2.0	1.8
Sugar beet	.3	.6	.5	1.2	.6	.7
Fruit, flowers and vegetables	1.2	.2	1.0	1.3	1.1	.9
Other crops	4.7	8.4	11.1	11.1	11.0	10.3
Total tillage— Temporary grass	17.6 5.0	28.6 13.6	33.8 10.9	36.5 14.4	34.5 11.0	32.9 12.0
Total arable Permanent grass	22.6 77.4	42.2 57.8	44.7 55.3	50.9 49.1	45.5 54.5	44.9 55.1
Total crops and grass	100.0	100.0	100.0	100.0	100.0	100.0
Average size (acres) —crops and grass	16.9	55.6	161.3	385.8	897.4	111.3
—rough grazing	—	8.2	18.3	124.4	870.8	24.8

Half the acreage of rough grazing in the Province was on Livestock farms and 93 per cent of this acreage was in Derbyshire. The averages per farm at the foot of Table 70 hide the true significance of rough grazings on Derbyshire farms. A better impression may be obtained from Table 71 which refers to Derbyshire alone. Farms below 25 acres had no rough grazings attached but there were five farms in the largest size group with an average of 3,831 acres.

AVERAGE SIZE OF LIVESTOCK FARMS IN DERBYSHIRE.

TABLE 71.

Size group—adjusted acreage	Number of farms	Average acreage		
		Crops and grass	Rough grazing	Total
1. 1—4.9	—	—	—	—
2. 5—24.9	160	16	—	16
3. 25—99.9	150	40	42	82
4. 100—299.9	92	128	147	275
5. 300—699.9	12	207	1,350	1,557
6. 700 and over	5	542	3,831	4,373
All groups	419	61	132	193

As in other type groups the general tendency was for the smaller farms to have a larger proportion of their crops and grassland under permanent grass. Except in Derbyshire the utilisation of the crops and grass land was remarkably similar over the whole Province. The lower proportion devoted to arable crops in Derbyshire Livestocks farms was at the expense of less wheat, barley and 'other' crops—such as turnips and other roots.

Livestock Carry.

As in other type groups, small Livestock farms have a higher density of stocking (Table 72) and a higher proportion of breeding cows and of pigs and poultry than larger farms.

Despite the variety of farming systems within the group, it is interesting to study the structure of the cattle population. One of the most noticeable features is the high proportion of heifers—49 per cent heifers, 22 per cent cows and bulls and 29 per cent steers. Derbyshire Livestock farms are unique among those of the rest of the Province not only in having large areas of rough grazings but also in the type of livestock carried. Of the 419 Livestock farms in Derbyshire three quarters have the rearing of dairy stores as an important enterprise. Heifers are bought in at something over a year old, reared for a time and sold at point of calving or newly calved. Very few steer calves were raised on these farms.

LIVESTOCK CARRY ON LIVESTOCK FARMS OF EACH SIZE.

TABLE 72

Per 100 acres

Type of Stock	Size of farm—adjusted acres					East Midlands
	5—24.9	25—99.9	100—299.9	300—699.9	700 & over	
Cows and heifers in milk	14.5	6.0	5.4	3.2	2.8	.5.1
Cows in calf, but not in milk	4.1	2.5	2.1	1.1	1.3	2.0
Heifers in calf, with first calf	6.9	4.5	3.1	2.0	2.4	3.2
Bulls	—	.5	.7	.4	.4	.6
Other cattle :—						
2 years old and over M	2.1	5.3	5.6	9.1	6.9	6.2
" " F	3.8	6.2	5.6	6.4	6.5	5.9
1 year old and under 2 M	1.2	2.1	2.5	2.1	1.2	2.2
" " F	4.2	6.6	4.0	3.2	4.8	4.4
Under 1 year old M	3.3	2.0	1.8	2.1	1.0	1.9
" " F	7.3	4.8	3.7	2.6	1.9	3.7
Total cattle	47.4	40.5	34.5	32.2	29.2	35.2
Breeding pigs	6.5	.5	.5	.2	.5	.6
Total pigs	26.7	2.9	2.1	1.1	1.7	2.7
Breeding sheep	7.3	16.7	14.5	20.2	25.3	16.7
Total sheep	26.8	46.2	41.9	56.4	67.0	47.2
Work horses	1.8	2.2	1.5	.8	.7	1.5
Fowls over 6 months	471.4	93.9	33.3	16.3	11.0	52.5
Total poultry	1,094.9	188.8	70.7	33.2	41.4	112.6
Total livestock units	57.5	42.0	35.3	34.7	34.0	37.1

The Livestock farms of Derbyshire can be roughly divided into three main groups. The most important consists of 316 farms rearing dairy stores—farms with far more cows in calf, heifers in calf and bulling heifers than were required for herd replacement.⁽¹⁾ Then there were 18 hill farms with more than 90 per cent of their area under rough grazings. Only eight of these had sheep as the main enterprise—the other 10 carried large numbers of cattle. The remaining 85 farms were very mixed, with very little cropping, and a few dairy cows. Of these, 80 were under 25 acres in size.

In Leicestershire, 699 farms were classified as Livestock farms. Few of these had any rough grazing attached to them. It is possible, without stating hard and fast definitions to identify from the Agricultural Returns three groups of farms. These are :

- (1) Farms with fattening cattle only i.e. with 'other cattle' two years old and over and no young stock. About one eighth of all Livestock farms were of this type.
- (2) Farms with cattle of all ages but with 'other cattle' numerous in relation to breeding cattle. These farms both rear and fatten cattle. Some sell the young stock as stores for others to fatten but most of them fatten all

(1) On the average East Midlands Dairy farm (Group 1) for every 100 cows and heifers in milk, there were 64 cows and heifers in calf but not in milk and heifers over two years old.

their own stock and many buy in stores to supplement those they are able to rear. Just under 40 per cent of the farms were of this type.

- (3) The remaining 50 per cent of Livestock farms, mainly the smaller ones, resembled Dairy farms. Their herd structure i.e. the relationship between 'other cattle' of various ages and cows in the herd was similar to that on Dairy farms. But the intensity of stocking was much less.

It is probable that the livestock farms in the remaining counties could be subdivided in similar fashion. The breakdown for Derbyshire and Leicestershire described above demonstrates the heterogeneous nature of this group and the need for more detailed study. But this must wait until more recent Agricultural Returns are available for analysis.

The distribution of tractors on Livestock farms at January, 1948, is shown in Table 73.

NUMBERS AND PERCENTAGE OF LIVESTOCK FARMS WITH VARIOUS NUMBERS OF TRACTORS
(EXCLUDING ONE AND TWO WHEELED TRACTORS) BY SIZE GROUPS.

TABLE 73.

TRACTORS PER FARM	SIZE OF FARM—ADJUSTED ACRES										EAST MIDLANDS	
	5—24.9		25—99.9		100—299.9		300—699.9		700 AND OVER			
	NOS.	%	NOS.	%	NOS.	%	NOS.	%	NOS.	%	NOS.	%
0.	385	95	648	64	239	30	20	15	3	14	1,295	55
1.	20	5	338	33	388	48	25	18	1	4	772	32
2.	—	—	20	2	147	18	55	40	—	—	222	9
3.	—	—	—	—	16	2	21	15	6	27	43	2
4.	—	—	—	—	4	1	10	7	3	14	17	1
5.	—	—	10	1	4	1	4	3	1	5	19	4
6.	—	—	—	—	—	—	—	—	4	18	7	†
7 OR MORE	—	—	—	—	1	†	2	2	4	18	—	—
Total	405	100	1,016	100	799	100	137	100	22	100	2,379	100

† Less than 0.5 per cent.

Estimated 'Output' of Livestock.

It is clear from what has already been written of the Livestock farms that some are concerned with rearing, some with fattening whilst some both rear and fatten stock. What of the position over the whole group? Does it supply store stock to farms of other types or does it rely on other farms, possibly outside the Province, for stores? Some conclusions, regarding cattle at least, can be drawn from a study of the Agricultural Returns. Table 74 provides an estimate of the number of cattle of each class on livestock farms in each county. In the second half of the table are various calculations which are of some

interest. The first shows heifers in calf with first calf as a percentage of cows and heifers in milk and cows in calf. The average for the whole group at 45 per cent compares with a figure of about 20 per cent for Dairy farms. In Derbyshire the proportion was 74 per cent. These figures emphasise the importance of cattle rearing on Livestock farms. Despite this, in all counties there appears to be a net purchase of store stock. In order to get some idea of the magnitude of these purchases it is necessary to allocate heifers in calf according to age and it had been assumed that two thirds will in fact be over two years of age. This proportion has, therefore, been added to the other cattle over two years old. In a self-contained herd these cattle would have to be available as cattle under one year old so that by subtracting cattle under one year from cattle over two years (including two thirds of the heifers in calf) a measure of the number purchased may be derived.

CATTLE ON LIVESTOCK FARMS.

TABLE 74.

	Nott-ingham	Leic-ester	Derby	Lindsey	Kest-even	Rut-land	East Midlands
(1). Cows and heifers in milk and cows in calf, but not in milk	3,876	6,264	2,352	4,343	812	1,150	18,797
(2). Heifers in calf, with first calf	1,792	2,523	1,736	1,668	389	373	8,481
(3). Bulls	474	495	129	284	57	69	1,508
(4). Other cattle 2 years old and over	5,175	14,393	4,194	4,362	919	3,097	32,140
(5). Other cattle 1 year and under 2.	3,344	6,005	2,907	3,337	611	1,450	17,654
(6). Other cattle under 1 year	2,571	6,073	1,106	3,207	669	1,154	14,780
Total cattle and calves	17,232	35,753	12,424	17,201	3,457	7,293	93,360
(7). Item (2) as per cent of (1)	46.2	40.3	73.8	38.3	48.0	32.5	45.1
(8). Item (4) + 2/3rds of (2)	6,370	16,075	5,351	5,474	1,178	3,346	37,794
(9). Item (8) - (6)	3,799	10,002	4,245	2,267	509	2,192	23,014
(10). Item (9) as per cent of (1) + (2)	67.0	113.8	103.8	37.7	42.4	143.9	84.4

Roughly 23,000 stores were required by livestock farms in 1947. In Derbyshire, at least 90 per cent of these were heifers for dairy herd replacements. These appear to be bought at about 18 months old and sold near to or at calving. The last line of Table 74 shows the relative dependence on purchases. Rutland, Derbyshire and Leicestershire relied heavily on store purchases but in Lindsey and Kesteven home bred stock contributed far more to the total cattle output.

The table shows that in every county there were many more cows and heifers than cattle under one year. This means that even on these farms many of the calves born are not reared. Most of these would be slaughtered—not sold to other farms. If any of these are beef type animals it is a waste not to rear them to maturity.

CATTLE ON DAIRY AND OTHER FARMS.

TABLE 75.

	Dairy, and cropping with dairy farms	All other groups	East Midlands
(1). Cows and heifers in milk and cows in calf, but not in milk	156,315	76,371	232,686
(2). Heifers in calf, with first calf	31,392	27,851	59,243
(3). Bulls	8,111	5,084	13,195
(4). Other cattle 2 years old and over	24,236	118,342	142,578
(5). Other cattle 1 year and under 2	40,889	79,425	120,314
(6). Other cattle under 1 year	52,524	64,803	117,327
Total cattle and calves	313,467	371,876	685,343
(7). Item (2) as per cent of (1)	20	36.5	25.5
(8). Item (4) ÷ 2/3rds. of (2)	45,164	136,909	182,073
(9). Item (8) - (6)	-7,360(1)	72,106(2)	64,746(2)
(10.) Item (9) as per cent of (1) + (2)	3.9	69.2	22.2

(1) This can be termed "Surplus available for selling out"

(2) Deficits required to be brought in.

Similar estimates for all farms show (Table 75) that there is a movement of stores into the Province and that the position is completely different on Dairy and Cropping with Dairying farms compared with farms in other groups.

Dairy type farms, with nearly half the total cattle population of the Province had a small 'surplus', and the whole of the 'deficit' was found on non-dairy farms. The simple segregation of dairy type farms, as in Table 75, puts a very different complexion on the livestock figures for the Province and stresses the value of a type of farming approach to the analysis and interpretation of agricultural statistics.

Three qualifications should be attached to these estimates. (1) only the June Census figures were used; an estimate which took account of all quarterly censuses might yield slightly different results. (2) no attempt was made to allow for any trend in the total cattle population and (3) no information is available to show what proportion of the 'deficit' is provided by cows sold from dairy herds and bought by feeders as 'drapes'. These qualifications do not in any way invalidate the main point made above, namely that a type of farming approach may shed new light on many problems of agricultural statistics.

CHAPTER XI.

GROUP 9. POULTRY FARMS.

In Chapter 3, three specialist types were defined. These were Pigs, Poultry and Market Gardens. No specialist Pig farms appeared in the sample, but two per cent of full time farms were classified as Poultry farms. Less than 0.5 per cent of the crops and grass, cattle and sheep on full-time farms were associated with these farms, but they carried two per cent of all the pigs and 11 per cent of the poultry.

Table 76 shows both the geographical scatter and the size distribution of these farms. Derbyshire had more poultry farms than any other county. Almost exactly one half of the total had less than five acres of crops and grass and only 21 had more than 25 acres. This fact had an extremely important bearing on all the figures relating to this group. For the majority, the raising fraction was one twentieth. The figures for Rutland were not raised, but those for the other counties have perforce been based on only 17 actual Agricultural Returns. The scope for error may, therefore, be considerable. For this reason, commentary will be brief and all the tables placed together at the end of the chapter.

The high proportion of farms employing no regular workers shown in Table 77 emphasises the small size of most of these specialist units. Despite this they are intensive units of production. The high level of employment per 100 acres (Table 78) is evidence of this. More than two thirds of the crops and grass available were under permanent grass and the crops grown were extensive ones requiring little labour. The use made of the land itself was clearly not a cause of the high labour input.

The true character of these farms stands revealed in Table 80. The livestock carry is extremely heavy on all size groups, poultry being by far the most important class. On average, on holdings of less than 5 acres there were 8 to 9 pigs and about 1,160 poultry per holding. Cattle were not important on these farms but the fact that virtually all the cattle were returned as females suggests that the main purpose of keeping them was to supply milk for domestic consumption.

The intensity of stocking is such that it would be impossible to provide all the necessary feed from the available land even if the whole of it could be devoted to suitable crops. This is true even of the farms in the 25 to 99.9 acres group. During the war feeding stuffs for poultry farms were severely rationed and many producers were compelled to go out of business. It is probable that at June, 1947 many of these had still not succeeded in making a fresh start or in regaining their previous scale of production. In 1939, the poultry population of the Province was 5,010,000. This declined to 2,486,000 in 1943; by 1947 it had climbed to 3,594,000 and by 1953 had reached the record level of 5,719,000⁽¹⁾. For some parts of the country there is evidence that the decline in poultry numbers on specialist farms was partly offset by an increase in numbers on general farms. This may well have been true of the East Midlands. The recent derationing of animal feeding stuffs may cause this trend to be reversed. Certainly it is probable that an analysis of the 1953 Agricultural Returns would reveal a considerable change in the number of specialist poultry farms.

POULTRY FARMS IN EACH COUNTY IN EACH SIZE GROUP.							Numbers
Size group—adjusted acres	Nott-ingham	Leic-ester	Derby	Lindsey	Kest-even	Rut-land	East Midlands
1. 1— 4.9	20	—	80	60	—	1	161
2. 5— 24.9	40	60	20	10	20	3	143
3. 25—49.9	—	—	—	—	—	1	11
4. 50—74.9	—	—	10	—	—	—	10
5. 75 and over	—	—	—	—	—	—	—
All sizes	60	60	110	70	20	5	325

NUMBER AND PERCENTAGE OF POULTRY FARMS WITH VARIOUS NUMBERS OF REGULAR WORKERS.
TABLE 77.

Number of regular workers per farm	Size of farm—adjusted acres						East Midlands			
	1—4.9		5—24.9		25—99.9					
	Nos.	%	Nos.	%	Nos.	%				
0.	101	63	101	70	10	48	212	65		
1.	20	12	21	15	—	—	21	7		
2.	40	25	20	14	10	48	61	19		
3.	—	—	—	—	1	4	30	9		
4.	—	—	—	—	—	—	1	—		
5 or more	—	—	—	—	—	—	—	—		
Total	161	100	143	100	21	100	325	100		

(1) MINISTRY OF AGRICULTURE AND FISHERIES. *Final results of June, 1953, Agricultural Census.* Series CF/53.c.E.W. M.A.F. Collection of Statistics Branch Government Buildings (Block A) Lytham-St.-Annes, Lancs.

NUMBERS OF WORKERS ON POULTRY FARMS OF EACH SIZE.

TABLE 78.

Type of labour	Size of farm—adjusted acres			Per 100 acres East Midlands
	1—4.9	5—24.9	25—99.9	
Regular —male	13.5	4.5	3.2	5.3
—female	9.0	1.3	0.1	2.0
—Total	22.5	5.8	3.3	7.3
Casual —male	4.5	0.1	1.0	0.9
—female	9.0	1.1	—	1.9
Other(1)	0.3	1.1	0.2	0.7
Total casual and other	13.8	2.3	1.2	3.5
All 'hired' workers	36.3	8.1	4.5	10.8
Persons available(2)	72.6	16.2	6.6	20.8
Total 'hired' persons available per farm	1.0	1.0	2.2	1.1

(1) Women's Land Army and Prisoners of War.

(2) Including allowance for manual work of farmer and wife.

LAND UTILISATION ON POULTRY FARMS OF EACH SIZE.

TABLE 79.

Crop	Size of farm—adjusted acres			Per 100 acres East Midlands
	1—4.9	5—24.9	25—99.9	
Wheat	—	8.4	2.9	5.6
Barley	—	—	16.3	5.1
Oats	—	3.4	—	1.8
Potatoes	—	—	3.0	0.9
Sugar beet	—	—	—	—
Fruit, flowers and vegetables	—	3.1	—	1.7
Other crops	18.7	14.3	10.1	13.6
Total tillage	18.7	29.2	32.3	28.7
Temporary grass	—	3.3	—	1.9
Total arable	18.7	32.5	32.3	30.6
Permanent grass	81.3	67.5	67.7	69.4
Total crops and grass	100.0	100.0	100.0	100.0
Average size (acres) —crops and grass	2.8	12.4	48.3	10.0
—rough grazing	2.0	—	9.5	1.6

LIVESTOCK CARRY ON POULTRY FARMS OF EACH SIZE.

TABLE 80.

Type of Stock	Size of farm—adjusted acres			Per 100 acres East Midlands
	1—4.9	5—24.9	25—99.9	
Cows and heifers in milk	9.0	9.0	1.1	6.5
Cows in calf, but not in milk	—	0.1	—	—
Heifers in calf, with first calf	—	4.4	—	2.5
Bulls	—	—	—	—
Other cattle :—				
2 years old and under 2 M	—	0.3	1.2	0.6
" " F	—	1.1	9.9	3.7
1 year old and under 2 M	—	—	—	—
" " F	—	1.2	18.7	6.5
Under one year old M	—	—	—	—
" " F	—	5.7	1.0	3.4
Total cattle	9.0	21.8	31.9	23.2
Breeding pigs	72.2	2.2	—	11.1
Total pigs	302.5	3.4	—	43.2
Breeding sheep	—	0.1	1.5	0.5
Total sheep	—	0.4	8.9	2.9
Work horses	—	3.4	0.1	1.9
Fowls over 6 months	12,105.1	2,455.6	852.7	3,327.2
Total poultry	41,408.6	10,707.7	2,971.3	12,483.4
Livestock units	466.3	128.5	52.83	151.0

NUMBERS AND PERCENTAGE OF POULTRY FARMS WITH VARIOUS NUMBER OF TRACTORS
(EXCLUDING ONE AND TWO WHEELED TRACTORS) BY SIZE GROUPS.

TABLE 81.

TRACTORS PER FARM	SIZE OF FARM—ADJUSTED ACRES						EAST MIDLANDS			
	1—4.9		5—24.9		25—99.9					
	NOS.	%	NOS.	%	NOS.	%				
0	161	100	123	86	11	52	295	91		
1	—	—	20	14	10	48	20	6		
2	—	—	—	—	—	—	10	3		
3 OR MORE	—	—	—	—	—	—	—	—		
TOTAL	161	100	143	100	21	100	325	100		

CHAPTER XII.

GROUP 10. MARKET GARDENS.

Fruit, flowers and vegetables for human consumption represent a distinct type of agricultural production requiring considerable specialised knowledge and frequently a substantial investment of capital. This is particularly true of fruit and flowers. It has already been shown (Chapters V and VIII) that Predominantly Arable and Cropping with Livestock farms grow most of the vegetables produced in the Province. On such farms vegetables are grown on a farm scale, side by side with potatoes, sugar beet, barley, wheat and other crops. Production is not intensive in comparison with crops grown under glass or in French gardens where several crops per annum are produced from the same area of land. In Groups 5 and 6 only 10 per cent of the crops and grass area was devoted to flowers, fruit and vegetables.

Market Gardens have been defined as those farms on which 50 per cent or more of the estimated total labour requirement was in respect of flowers, fruit and vegetables. Some of these crops, particularly those grown under glass, require a great deal of labour and it does not follow, therefore, that 50 per cent or more of the land available was devoted to horticultural crops. (In fact on all Market Gardens below 300 acres in size this proportion was exceeded). In common parlance, Market Garden often refers only to intensive growers of vegetables but the above definition clearly includes fruit growers and glasshouse producers. Glasshouses on holdings of less than one acre however, are not included.

Table 82 shows that 885 farms or four per cent of all the full-time farms in the Province were classified as Market Garden. More than half of this total were between five and 25 acres in size and only 71 exceeded 50 acres. Derbyshire and Leicestershire were the counties with most Market Gardens.

TABLE 82. MARKET GARDENS IN EACH COUNTY IN EACH SIZE GROUP. Numbers

Size group—adjusted acres	Nott-ingham	Leic-ester	Derby	Lindsey	Kest-even	Rut-land	East Midlands
1. 1— 4.9	20	80	60	40	—	—	200
2. 5—24.9	60	140	160	60	60	2	482
3. 25—49.9	40	320	40	20	10	2	132
50—74.9	30	—	—	—	—	—	30
75—99.9	10	—	—	10	—	1	21
4. 100—149.9	—	—	4	4	—	—	8
150—199.9	—	—	—	—	—	—	4
200—249.9	—	—	—	4	—	—	4
250—299.9	—	—	—	—	—	—	—
5. 300—699.9	—	2	—	—	2	—	4
6. 700 and over	—	—	—	—	—	—	—
All sizes	160	242	264	142	72	5	885

Employment of Labour.

Despite the many small units and an average size of only 22 acres, a large proportion of market gardens employed considerable numbers of regular workers. At the same time Table 83 shows that 22 per cent of all market gardens employed no regular hired labour. Many market gardens are dependent on casual workers for a large

NUMBER AND PERCENTAGE OF MARKET GARDENS WITH VARIOUS NUMBERS OF REGULAR WORKERS.

TABLE 83.

Number of regular workers per farm	Size of farm—adjusted acres										East Midlands	
	1—4.9		5—24.9		25—99.9		100—299.9		300—699.9			
	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%		
0.	60	30	120	25	10	6	—	—	—	—	190 22	
1.	20	10	160	33	40	21	—	—	—	—	220 26	
2.	40	20	120	25	11	6	—	—	—	—	171 19	
3.	40	20	21	4	22	12	—	—	—	—	83 9	
4.	20	10	—	—	40	21	4	25	—	—	64 7	
5.	—	—	41	9	—	—	—	—	—	—	41 5	
6.	20	10	20	4	30	16	—	—	—	—	70 8	
7.	—	—	—	—	10	6	—	—	—	—	10 1	
8.	—	—	—	—	—	—	4	25	—	—	—	
9.	—	—	—	—	10	6	—	—	—	—	10 1	
10.	—	—	—	—	10	6	8	50	4	100	22 2	
11 or more	—	—	—	—	—	—	—	—	—	—	—	
Total	200	100	482	100	183	100	16	100	4	100	885 100	

proportion of their labour force. On average at June, 24 per cent of the total 'hired' labour consisted of casual workers (Table 84). A further 14 per cent were Women's Land Army and Prisoners of War. Per 100 acres Market Gardens had many times more 'hired' workers than any other type of farm.

NUMBER OF WORKERS ON MARKET GARDENS OF EACH SIZE.

TABLE 84.

Type of labour	Size of farm—adjusted acres					Per 100 acres
	1—4.9	5—24.9	25—99.9	100—299.9	300—699.9	
Regular —male	87.5	11.3	9.1	5.0	6.6	10.9
—female	—	1.6	1.5	1.2	3.4	1.6
—Total	87.5	12.9	10.6	6.2	10.0	12.5
Casual —male	12.5	6.6	5.7	1.9	—	3.5
—female	4.2	1.9	1.5	0.7	0.3	1.4
Other(1)	—	3.9	3.1	0.5	1.5	2.9
Total casual and other	16.7	7.4	10.3	3.1	1.8	7.8
All 'hired' workers	104.2	20.3	20.9	9.3	11.8	20.3
Persons available(2)	145.8	27.9	23.2	9.8	12.1	24.9
Total 'hired' workers per Market Garden	2.5	2.6	9.2	17.3	42.0	4.4

(1) Women's Land Army and Prisoners of War.

(2) Including allowance for manual work of farmer and wife.

Land Utilisation.

The broad pattern of land utilisation on Market Gardens is revealed in Table 85. The proportion of land under tillage crops was higher than in any other type group. It is interesting to note that Market Gardens had more land per 100 acres under permanent grass than the Predominantly Arable of Group 4 but that less was devoted to temporary grass. This implies that on Market Gardens the importance of grass in the rotation is much less than on the Predominantly Arable farms.

Fruit, flowers and vegetables occupied more than half the area under tillage. The remaining area was devoted to a variety of ordinary farm crops, potatoes and wheat being the most important among these.

TABLE 85. LAND UTILISATION ON MARKET GARDENS OF EACH SIZE. Per 100 acres

Crop	Size of farm—adjusted acres					East Midlands
	1— 4.9	5— 24.9	25— 99.9	100— 299.9	300— 699.9	
Wheat	4.2	4.9	5.5	13.2	8.7	6.7
Barley	—	1.6	1.2	6.2	4.2	2.3
Oats	—	3.5	3.5	2.1	2.6	3.1
Potatoes	7.3	9.6	9.3	5.0	18.7	9.4
Sugar beet	—	—	1.4	0.8	7.7	1.3
Fruit, vegetables and flowers	66.6	56.5	56.4	53.5	22.0	53.7
Other crops	17.7	7.4	5.7	3.7	11.7	6.7
Total tillage	95.8	83.5	83.0	84.5	75.6	83.2
Temporary grass	—	0.8	2.9	6.9	1.1	2.6
Total arable	95.8	84.3	85.9	91.4	76.7	85.8
Permanent grass	4.2	15.7	14.1	8.6	23.3	14.2
Total crops and grass	100.0	100.0	100.0	100.0	100.0	100.0
Average size (acres)						
—crops and grass]	2.4	13.0	43.8	186.6	357.3	21.7
—rough grazing	—	—	0.6	—	25.8	0.2

Some of the data available in the Agricultural Returns regarding fruit, flowers and vegetables for human consumption is summarised in Table 85. It was shown in Chapter IV, Table 16, that Market Gardens had only 10 per cent of the total acreage of fruit, vegetables and flowers in the Province but it is clear from Table 86 that about two thirds of the total provincial acreage of 'vegetables' were in fact under peas for harvesting dry. This is a crop rarely found on true Market Gardens and its inclusion among horticultural crops in the Agricultural Returns is misleading and confusing. If peas for harvesting dry are excluded then in 1947 about 26 per cent of the acreage of vegetables for human consumption was grown on Market Gardens.

Table 86 should be studied in conjunction with the relevant portions of Appendix 1. Because of the small total acreages and

the unusual scatter of holdings, the raised sample figures for orchards, soft fruit and crops under glass were substantially different from the totals given in the Agricultural Statistics. It does not necessarily

DISTRIBUTION OF FRUIT, FLOWER AND VEGETABLE PRODUCTION. EAST
MIDLANDS. RAISED SAMPLE DATA.

TABLE 86.

Acres

	Predominantly Arable		Cropping with Livestock		Market Gardens	East Midlands All Types
	Group 4	Group 5	Group 6	Group 7	Group 10	
Orchards	358	519	138	414	958	5,408
Small fruit *	130	41	3	3	1,283	1,717
Vegetables for human consumption						
Crops under glass	41,156	8,378	20,191	9,548	7,448	99,477
Flowers and nursery stock	4	1	1	20	76	86
	46				535	741
Total	41,694	8,940	20,333	9,985	10,300	107,429
Peas for harvesting dry	29,131	5,963	16,754	7,878	176	68,703

* Excluding small fruit under orchard trees.

follow that the division of the acreage between Market Gardens and other farms is very different from that implied in Table 86. The bulk of the soft fruit, flowers and nursery stock and of crops under glass appears to be on Market Gardens and it is probable that the orchards on these holdings are run as commercial units. Because of the high value of the output per acre from these crops the contribution of Market Gardens to the horticultural output of the East Midlands may be far higher than is indicated by the fact that they handle only about 26 per cent of the horticultural acreage (excluding peas harvested dry). Almost certainly, they contribute more than 25 per cent of the total output but the exact proportion cannot be calculated accurately with the data available. Since 1947, the changes in acreage which have occurred have tended to leave Market Gardens with a higher proportion of the total horticultural output, i.e. the acreage of vegetables has declined and the acreage of orchards, soft fruits and crops under glass has tended to increase.

More details of the crops grown on Market Gardens are given in Table 87. These are "raised" total figures and are, therefore, subject to some margin of error but they do reveal certain points. The first is the high proportion of the total acreage devoted to brassicae and legumes—crops with a relatively low value of gross output per acre. Relatively small acreages were under high value crops such as celery, rhubarb, lettuce, beetroot, parsnips and onions. Another point is the concentration of crops under glass, nursery crops and flowers on the smallest holdings. Most of the orchard acreage was on holdings of between 25 and 100 acres but the size group with most small fruit was that between 100 and 300 acres.

TABLE 87.

ANALYSIS OF FRUIT AND VEGETABLE ACREAGE ON FULL-TIME MARKET GARDEN FARMS.

Crop	Size of farm—adjusted acres					Nott-ingham	Leicester	Derby	Lindsey	Kesteven	Rutland	East Midlands
	1— 4.9	5— 24.9	25— 99.9	100— 299.9	300— 699.9							
Brussels sprouts	10	566	577	274	58	355	209	577	322	19	3	1,485
Spring cabbage	—	186	119	20	26	92	121	100	5	31	2	351
Summer cabbage	—	111	129	30	32	115	28	73	62	22	2	302
Autumn cabbage	5	85	45	10	4	75	10	33	12	19	—	149
Winter cabbage	5	150	112	9	—	105	60	23	41	45	2	276
Autumn savoys	—	45	78	14	—	20	10	82	22	—	3	137
Winter savoys	—	300	498	88	2	390	87	229	138	40	4	888
Kale and sprouting broccoli	—	65	15	4	—	20	55	4	—	—	—	84
Cauliflower or broccoli	5	475	593	56	8	415	69	543	103	4	3	1,137
Carrots	—	60	52	50	12	15	5	5	130	17	2	174
Parsnips	—	30	20	19	5	—	1	19	38	14	2	74
Turnips and swedes	—	55	50	14	—	40	7	4	50	13	5	119
Beetroot	—	125	110	16	35	15	10	141	78	42	—	286
Onions	10	35	65	12	18	15	10	50	47	18	1	140
Beans, broad	—	15	—	5	—	—	5	14	—	—	—	20
Beans, runner & french	—	105	69	9	4	25	49	61	36	15	1	187
Peas, green for market	10	250	326	49	8	235	90	218	91	5	4	643
Peas, green for canning	—	—	—	—	—	—	—	—	—	16	—	16
Peas, harvested dry	—	—	—	176	—	—	—	—	176	—	—	176
Asparagus	—	—	—	—	—	—	—	—	—	—	—	—
Celery	—	5	85	4	—	30	—	29	35	—	—	94
Lettuce	15	60	70	7	6	40	31	71	1	15	—	158
Rhubarb	5	146	92	18	14	8	30	153	60	24	—	275
Tomatoes growing in the open	—	—	10	1	6	10	6	—	—	—	—	17
Other vegetables growing in the open	5	30	3	53	12	8	—	39	44	12	—	103
Unspecified crops	40	110	7	—	—	5	80	10	40	22	—	157
Total vegetables	110	3,009	3,125	938	266	2,033	973	2,478	1,527	393	34	7,448

TABLE 87 (Continued)

Crop	Size of farm—adjusted acres					Nott-ingham	Leicester	Derby	Lindsey	Kesteven	Rutland	East Midlands
	1— 4.9	5— 24.9	25— 99.9	100— 299.9	300— 699.9							
All crops growing in glasshouses	30	20	3	1	3	12	23	16	—	6	—	57
All crops growing in frames	5	5	2	2	5	8	3	—	2	6	—	19
Hardy nursery stock	70	230	142	4	—	7	425	—	4	10	—	446
All bulb flowers not under glass	10	5	—	—	—	5	6	5	—	—	—	16
Other flowers not under glass	50	10	3	1	9	8	59	1	—	5	—	73
Total	165	270	150	8	18	40	516	22	6	27	—	611
Apples, dessert	5	10	192	12	—	120	5	12	65	15	2	219
Apples, cooking	20	81	259	12	4	190	40	17	45	39	45	376
Apples, cider	—	—	—	—	—	—	—	—	—	—	—	—
Pears	—	5	41	16	—	—	—	—	26	15	1	62
Cherries	—	—	18	—	—	—	—	—	—	20	18	18
Plums	—	26	42	24	—	20	10	44	5	10	3	92
Other orchard fruit and nuts	—	—	—	—	—	—	—	—	—	—	—	—
Unspecified crops	10	6	175	—	—	130	8	52	—	—	1	191
Total orchard acreage	35	128	727	64	4	460	63	151	130	84	70	958
Strawberries	—	111	187	8	18	25	10	128	142	18	1	324
Raspberries	—	15	98	44	—	53	—	15	89	—	—	157
Currants, black	—	21	200	276	—	35	5	5	451	—	1	497
Currants, red and white	—	—	5	—	—	—	—	—	5	—	—	5
Gooseberries	—	61	30	104	—	10	—	5	179	—	1	195
Loganberries and cultivated blackberries	—	—	10	156	8	—	—	—	166	8	—	174
Unspecified crops	10	30	9	—	—	35	13	—	—	—	1	49
Total acreage of small fruit*	10	238	539	588	26	123	50	166	1,032	26	4	1,401
Total acreage fruit and vegetables	320	3,549	4,251	1,596	314	2,635	1,571	2,813	2,643	530	108	10,300
Total acreage crops and grass	480	6,285	8,021	2,985	1,429	4,670	3,504	4,068	5,174	1,620	164	19,200
Number of farms	200	482	183	16	4	160	242	264	142	72	5	885

* Includes small fruit under orchard trees.

Livestock Carry.

Market Gardens carry more stock per acre than Predominantly Arable farms (Group 4) but they rely more on pigs and poultry and less on cattle. This is partly because, even within the size grouping used, Market Gardens are smaller and partly a reflection of the intensive way in which the available land is used.

It was suggested in Chapter XI that the few cattle on poultry farms were probably kept to provide milk for domestic consumption—they were nearly all females of various ages. The position on Market Gardens seems to be quite different (Table 88). Among 'other cattle', males exceeded females. Clearly the position will vary from farm to farm but many market gardeners keep a few cattle as a source of manure. An adequate supply of organic manure is a valuable asset on a Market Garden and despite the cost of purchase and transport, farmyard manure is still regarded as the best source of humus by many growers.

TABLE 88. LIVESTOCK CARRY ON MARKET GARDENS OF EACH SIZE. Per 100 acres

Type of Stock	Size of farm—adjusted acres					East Midlands
	1—4.9	5—24.9	25—99.9	100—299.9	300—699.9	
Cows and heifers in milk	—	2.6	1.8	0.3	—	1.6
Cows in calf, but not in milk	—	1.0	0.3	0.2	—	0.5
Heifers in calf, with first calf	—	0.3	—	0.1	—	0.1
Bulls	—	—	—	—	—	—
Other cattle :—						
2 years old and over M	—	—	1.2	4.4	8.3	1.8
" " F	—	0.6	0.6	1.7	—	0.7
1 year old and under 2 M	—	0.6	1.1	0.4	—	0.7
" " F	—	0.6	0.9	0.5	2.9	0.9
Under 1 year old M	—	0.3	1.0	0.3	2.0	0.7
" " F	—	—	0.1	1.1	—	0.2
Total cattle	—	6.0	7.0	9.0	13.2	7.2
Breeding pigs	—	1.9	0.9	0.3	10.2	1.8
Total pigs	108.3	19.4	13.0	0.5	58.8	19.0
Breeding sheep	—	—	—	—	—	—
Total sheep	—	—	1.5	—	—	0.7
Work horses	—	4.5	3.0	0.5	—	2.8
Fowls over 6 months	595.8	85.7	81.9	49.1	393.3	114.1
Total poultry	1279.2	221.6	191.3	52.3	1,155.8	278.6
Total livestock units	28.3	14.7	12.2	8.7	30.4	14.2

Market Gardens of under five acres had no work horses and Table 89 shows that at January, 1948 many of them were without three or four wheeled or larger tractors. A proportion of those between five and 25 acres were without horses as there were only 0.6 work horses per holding on this group. A more complete picture is provided in Table 90. This shows when compared with Table 89 that many Market Gardens below 25 acres in size were without a tractor of any kind in January, 1948. It is probable, of course, that

the horses were mainly on the Market Gardens without tractors. One and two wheeled tractors accounted for 35 per cent of all tractors found on Market Gardens. In fact, 24 per cent of all the one and two wheeled tractors in the East Midlands were on Market Gardens.

NUMBERS AND PERCENTAGE OF MARKET GARDENS WITH VARIOUS NUMBERS OF TRACTORS (EXCLUDING ONE AND TWO WHEELED TRACTORS) BY SIZE GROUPS.

TABLE 89.

Tractors per farm	Size of farm—adjusted acres										East Midlands	
	1—4.9		5—24.9		25—99.9		100—299.9		300—699.9			
	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%		
0.	160	80	242	50	52	28	—	—	—	—	454 51	
1.	40	20	240	50	80	44	—	—	—	—	360 41	
2.	—	—	—	—	41	22	8	50	—	—	49 5	
3.	—	—	—	—	10	6	4	25	2	50	16 2	
4.	—	—	—	—	—	—	—	—	—	—	—	
5.	—	—	—	—	—	—	4	25	2	50	6 1	
6.	—	—	—	—	—	—	—	—	—	—	—	
7 or more	—	—	—	—	—	—	—	—	—	—	—	
Total	200	100	482	100	183	100	16	100	4	100	885 100	

ESTIMATED NUMBERS OF TRACTORS ON MARKET GARDENS BY TYPES

TABLE 90.

Tractors	Size of farm—adjusted acres						East Midlands
	1—4.9	5—24.9	25—99.9	100—299.9	300—699.9	700 and over	
Tracklayers : Over 6 H.P. 6 H.P. and under	20	53	10	—	2	—	85 38
3 and 4 wheeled tractors	20	—	10	8	—	—	—
I and 2-wheeled tractors	27	183	196	40	14	—	460
All tractors	93	177	42	—	4	—	316
All tractors	160	413	258	48	20	—	899

CHAPTER XIII.

PART-TIME, SPARE-TIME AND OTHER HOLDINGS.

Part-time holdings have been defined for the purposes of this classification as those with an estimated labour requirement of between 600 and 1,800 hours. Holdings requiring less than 600 hours of labour have been labelled Spare-time. In addition, both Part and Spare-time holdings were required to have a minimum carry of livestock. Holdings without livestock were included in 'other' holdings.

Part and Spare-time holdings.

Tables 91 to 96 at pages 122 to 124 refer to Part-time and Spare-time holdings. They are uniform with those already presented for full-time farms.

It is clear that Part-time and Spare-time holdings are to be found in considerable numbers in all the counties of the Province. They are all small in size. Most Part-time holdings were between 5 and 25 acres in size, and most Spare-time holdings had less than five acres of crops and grass. Only seven per cent of Part-time and five per cent of Spare-time holdings employed one or more regular workers, and many of these were almost certainly working on neighbouring holdings or farms. A few of the occupiers of Part and Spare-time holdings were agricultural contractors. Some of these were machinery contractors, but others supplied only labour.⁽¹⁾ Apart from this, many of the workers appearing on the Agricultural Returns for these holdings must have been underemployed or in part-time employment outside agriculture. For instance, the Spare-time holdings of over 25 acres had an average of 0.9 'hired' workers—more than would be required to perform the maximum of 600 hours of work permitted by definition—excluding the occupier and his wife. On average, the estimated labour requirement was 1,295 hours for Part-time and 458 hours for Spare-time holdings. If 2,200 hours per worker may be regarded as full-time employment then Part-time holdings provided roughly 60 per cent, and Spare time holdings 20 per cent employment.

(1) According to the instructions on the Agricultural Census schedule, such workers should be returned by the farmer who employs them on the day of the census.

Tables 94 and 95 show that the cropping and stocking of these holdings had no very distinctive features. The crops grown were roughly the same as on Dairy farms except that there were proportionately more fruit and vegetables. The stocking of these farms was not very intensive, but Part-time holdings carried considerably more stock per 100 acres than Spare-time holdings. In terms of livestock units within each size of farm group, Dairy farms, for example, had many more livestock per 100 acres. On both Part-time and Spare-time holdings, the proportion of cows and heifers carried suggests that milk production for domestic consumption was the main objective—the average number of cows and heifers in milk and cows in calf per holding was 1.2 on Part-time and 0.2 on Spare-time holdings.

Despite the presence of livestock, and of various crops, it is almost certain that many of these holdings are in fact detached portions of larger farms. Unfortunately, this point cannot be resolved without an elaborate scrutiny of the census schedules for identical signatures or cross reference to advisory officers or other persons well acquainted with each holding.

PART-TIME AND SPARE-TIME HOLDINGS IN EACH COUNTY IN EACH SIZE GROUP.

Size group—adjusted acres	Numbers													
	Nott-ingham		Leic-ester		Derby		Lindsey		Kest-even		Rut-land		East Midlands	
	P.T.	S.T.	P.T.	S.T.	P.T.	S.T.	P.T.	S.T.	P.T.	S.T.	P.T.	S.T.	P.T.	S.T.
1. 1—4.9	460	480	60	560	440	660	860	720	160	260	15	44	1,995	2,724
2. 5—24.9	720	120	400	280	1,040	460	1,100	280	260	60	38	16	3,558	1,216
3. 25—99.9	30	—	130	10	140	20	20	—	—	—	24	2	344	32
All sizes	1,210	600	590	850	1,620	1,140	1,980	1,000	420	320	77	62	5,897	3,972
Average size (acres)—crops and grass	8.8	3.8	17.6	5.0	10.6	5.0	6.9	3.8	8.3	4.0	18.5	5.6	9.6	4.4

NUMBER AND PERCENTAGE OF PART-TIME AND SPARE-TIME HOLDINGS WITH VARIOUS NUMBERS OF REGULAR WORKERS.

TABLE 92.

Number of regular workers per farm	Size of farm—adjusted acres												East Midlands		
	1—4.9		5—24.9		25—99.9		P.T.		S.T.		P.T.		S.T.		
	P.T.	S.T.	P.T.	S.T.	P.T.	S.T.	Nos.	%	Nos.	%	Nos.	%	Nos.	%	
	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.
0.	1,894	95	2,599	95	3,312	93	1,175	96	298	86	12	37	5,504	93	3,786
1.	80	4	64	2	184	5	21	2	34	10	20	63	298	5	105
2.	21	1	40	2	41	1	—	—	2	1	—	—	64	1	40
3 or more	—	—	21	1	21	1	20	2	10	3	—	—	31	1	41
Total	1,995	100	2,724	100	3,558	100	1,216	100	344	100	32	100	5,897	100	3,972

NUMBER OF WORKERS ON PART-TIME AND SPARE-TIME HOLDINGS OF EACH SIZE.

TABLE 93.

Per 100 acres

Type of labour	Size of farm—adjusted acres						East Midlands	
	1—4.9		5—24.9		25—99.9			
	P.T.	S.T.	P.T.	S.T.	P.T.	S.T.	P.T.	S.T.
Regular —male	1.8	2.3	0.9	2.5	0.5	2.5	0.9	2.4
—female	.4	0.9	0.1	0.4	0.2	—	0.1	0.6
—Total	2.2	3.2	1.0	2.9	.7	2.5	1.0	3.0
Casual —male	4.0	1.6	1.1	0.2	0.6	1.2	1.3	0.8
—female	—	—	0.2	—	0.1	—	0.2	—
Other(1)	—	—	0.1	—	0.2	—	0.1	—
Total casual and others	4.0	1.6	1.4	0.2	0.9	1.2	1.6	0.8
All 'hired' workers	6.2	4.8	2.4	3.1	1.6	3.7	2.6	3.8
Persons available(2)	41.9	46.4	11.5	14.9	4.5	7.7	13.0	26.3
Total 'hired' persons per holding	0.2	0.1	0.3	0.3	0.5	0.9	0.3	0.2

(1) Women's Land Army and Prisoners of War.

(2) Including allowance for manual work of farmer and wife.

LAND UTILISATION ON PART-TIME AND SPARE-TIME HOLDINGS OF EACH SIZE.

TABLE 94.

Per 100 acres

Crop	Size of farm—adjusted acres						East Midlands	
	1—4.9		5—24.9		25—99.9			
	P.T.	S.T.	P.T.	S.T.	P.T.	S.T.	P.T.	S.T.
Wheat	1.3	0.7	3.7	3.0	6.7	0.4	4.1	2.0
Barley	3.1	2.2	5.7	5.8	1.9	0.4	4.7	4.2
Oats	0.4	0.1	4.3	3.4	6.7	—	4.4	2.0
Potatoes	9.6	7.5	5.6	0.3	1.0	—	5.1	3.0
Sugar beet	6.3	1.1	2.3	—	—	—	2.2	0.4
Fruit, flowers and vegetables	23.1	14.0	3.5	0.7	0.5	—	4.8	5.6
Other crops	8.3	4.4	4.6	4.3	5.0	22.8	5.1	5.2
Total tillage	52.1	30.0	29.7	17.5	21.8	23.6	30.4	22.4
Temporary grass	1.0	3.6	5.5	9.9	9.2	28.8	5.8	8.4
Total arable	53.1	33.6	35.2	27.4	31.0	52.4	36.2	30.8
Permanent grass	46.9	66.4	64.8	72.6	69.0	47.6	63.8	69.2
Total crops and grass	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Average size (acres)								
—crops and grass	2.8	2.4	11.0	8.4	34.2	25.2	9.6	4.4
—rough grazing	0.1	0.3	0.3	0.1	2.0	19.1	0.4	0.4

LIVESTOCK CARRY ON PART-TIME AND SPARE-TIME HOLDINGS OF EACH SIZE

TABLE 95.

Per 100 acres

**NUMBERS AND PERCENTAGE OF PART-TIME AND SPARE-TIME HOLDINGS WITH VARIOUS
NUMBERS OF TRACTORS (EXCLUDING ONE AND TWO WHEELED TRACTORS) BY SIZE GROUPS**

TABLE 96.

Tractors per holding	Size of farm—adjusted acres												East Midlands	
	1—4.9				5—24.9				25—99.9					
	P.T.		S.T.		P.T.		S.T.		P.T.		S.T.		P.T.	S.T.
	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%	Nos.	%
0.	1,854	93	2,662	98	3,177	89	1,133	93	296	86	32	100	5,327	90
1.	141	7	22	1	360	10	23	2	48	14	—	—	549	9
2.	—	—	40	1	.21	1	20	2	—	—	—	—	21	45
3 or more	—	—	—	—	—	—	40	3	—	—	—	—	40	1
Total	1,995	100	2,724	100	3,558	100	1,216	100	344	100	32	100	5,897	100
													3,972	100

‘Other’ Holdings.

Some of the general characteristics of these holdings have already been commented on. (Chapter III p. 43). Of all the holdings in the Province, eight per cent with two per cent of the total crops and grass acreage were placed in this category. It is possible to subdivide the group further into three, namely, Holdings not farmed, Grazings and Rough Grazings. The distribution of these three sub-groups between counties is shown in Table 97.

TABLE 97. DISTRIBUTION OF 'OTHER' HOLDINGS BY COUNTIES. Numbers

County	Holdings not Farmed	Grazings	Rough Grazing	Total
Nottingham	139	222	80	441
Leicester	244	166	—	410
Derby	152	184	80	416
Lindsey	540	426	—	966
Kesteven	185	64	20	269
Rutland	23	34	1	58
East Midlands	1,283	1,096	181	2,560

Holdings not farmed were usually small, and often under a single crop. No livestock were carried on the majority, but a few large units with some crops and stock were included here. These were farms requisitioned for various war-time uses and in process of being prepared for handing back to their original occupiers.

Holdings with no cultivations and with cattle and sheep as the only livestock (except for not more than 25 poultry) were regarded as grazings. These were mainly odd fields, parks and golf courses.

Rough Grazings were those holdings with rough grazing land only and no livestock.

It is clear from the definitions that many of these holdings are probably detached portions of other farms. But some do exist as separate entities. As explained in Chapter III, an attempt was made to undertake all amalgamations in Derbyshire. Despite this, it was estimated there were 416 'Other' holdings in this county.

Table 98 shows how small the vast majority of 'Other' holdings are.

SIZE DISTRIBUTION OF 'OTHER' HOLDINGS. Numbers

Size group—adjusted acres	Holdings not farmed	Grazings	Rough grazings	Total
1— 4.9	589	265	181	1,035
5— 24.9	508	597	—	1,105
25— 99.9	144	202	—	346
100—299.9	38	28	—	66
300—699.9	2	4	—	6
700 and over	2	—	—	2
All groups	1,283	1,096	181	2,560
Average size (acres)				
—Crops and grass	19.7	20.4	—	18.6
—rough grazings	0.4	0.1	5.5	0.7

In terms of labour requirements 'Other' holdings were comparable in size to Part-time holdings—having 1,104 hours of work compared with 1,295 on Part-time holdings.

CHAPTER XIV.

THE AREA DISTRIBUTION OF FARMING TYPES IN THE EAST MIDLANDS

(With a Note on the Farm Management Survey Sample).

A general indication has already been given in Chapter IV of the distribution of the various types of farming among the counties of the East Midlands Province. It is immediately apparent that most of the Dairy Farms are in Derbyshire and Leicestershire and most of the Predominantly Arable farms are in Kesteven and Lindsey. But farms of a particular type are seldom scattered evenly throughout the counties in which they are chiefly found and it is important to know how variations in soil and other physical circumstances influence the distribution of farms within counties.

An attempt has been made to throw light on this problem by plotting the approximate location of farms of each type. The resultant scatter diagrams are reproduced at the end of this chapter. A Physical Map Transparency is provided in a pocket at the end of the book for use with the scatter diagrams. The procedure followed was to identify the parish in which each farm in the classification sample was located. If the farm was in a size group with a raising factor of 20 (see Chapter III) then 20 dots were put on the diagram, either within the parish or with some very small parishes, in a fairly compact group with the parish as the focal point. The same was done for all other size groups; the number of dots being determined by the appropriate sampling fraction. The total number of dots is, therefore, roughly equal to the estimated number of farms of each type at June, 1947. Because they were few in number, with a large raising factor, no maps were prepared for Cropping with Pigs or Poultry, or for Poultry Farms.

It is at once clear from the diagrams that in the western half of the Province the emphasis is on livestock (including dairying) and in the eastern half on arable production. Despite this, there is no evidence of clear cut lines dividing one type of farming from another. In many areas farms with some common features, but with different patterns of organisation, are closely intermingled. Two farms side by side have the same proportion of land under tillage, but one may devote much more land to sale crops than the other. Land quality may vary significantly within small areas and it may be that the farmer growing most crops for sale farms better land than his neighbour.

The reports of the Land Utilisation Survey of Britain leave no doubt of the complexity of soil types over much of the East Midlands. The variations in climate and soils within quite small areas are often very significant. There can be no doubt that this complexity is such that no definite farming pattern related to the soil types can be detected in many areas. The differences do exist; to an observer on the spot they would be clear, but they may be too local in their effect to be revealed by a type of farming classification undertaken on a county or provincial basis.

Maps of the land use regions in the East Midlands may be found in the reports of the Land Utilisation Survey⁽¹⁾. Some of these maps are extremely complicated, and for the six counties of the Province 60 main land use regions are described (some of these are further subdivided). Many of these land regions are of considerable significance and the differences in farming types to which they give rise are to be observed in the dot diagrams attached to this chapter. On the other hand many soil differences are confined to small localities or are not sufficiently pronounced to exert an influence on the farming of the whole area.

It is proposed in this chapter to comment very briefly on the distribution of each type of farming in each county with some reference to the Land Utilisation Survey land use maps.

Nottinghamshire.

Despite the existence of the distinctive Forest Sand area in Nottinghamshire, the types of farming seem to form a much more vague pattern than in any other county in the Province. The main concentration of Dairy farms is in the South. Cropping with Dairying farms show a wide scatter, but there are fewer of them on the Forest Sand than elsewhere. Cropping with Livestock farms are well distributed over the county but Predominantly Arable farms are mainly in the North (i.e. on the overlap of the Lindsey Warpland of the Isle of Axholme), and in the centre around Mansfield. Livestock farms occur all over the county but with a slight concentration in the West in the area labelled Coal Measures on the land use map. There was some concentration of Market Gardens to the North West of Mansfield and North and East of Nottingham.

(1) Part 53.	Rutland	p. 23
Part 57.	Leicestershire	p. 295
Part 60.	Nottinghamshire	p. 538
Part 63.	Derbyshire	p. 36
Part 77.	Lincolnshire : Lindsey	p. 481
	Kesteven	p. 506

Leicestershire.

Dairy farming is the predominant type in Leicestershire but the majority of these farms are concentrated in the western half of the county and in the Belvoir vale. Cropping with Dairying farms are also widespread but there is a cluster in the extreme western side of the county adjacent to the Southern Marl Lowlands of Derbyshire. There is also a wide scatter of Livestock farms (the second most important type in the county) but they occur more frequently in the eastern and southern sections and on the Wolds near Loughborough. Interspersed among these Livestock farms in the eastern half of the county are a few Predominantly Arable and Cropping with Livestock farms. Next to Derby, Leicestershire contains the most Market Gardens. These are grouped around Leicester but at some distance from the city itself.

Derbyshire.

Three-quarters of the full-time farms in Derbyshire are Dairy farms. Nearly the whole of the county lies above the 200 ft. contour line and more than one third above the 800 ft. line, but Dairy farms are found over all the county except in the areas which the Land Utilisation Survey calls the Northern Moors and the Eastern Arable Plateau. The main concentrations are roughly in the Southern Foothills and the South West Marl Lowlands. Livestock farms are second in importance even though only one tenth of the farms are of this type. These are at the highest altitude—mainly the Northern Moors and the North East Hill Farming belt but in many parts dairy and livestock farms are closely intermingled. Cropping with Dairying farms are almost confined to the Eastern Arable Plateau and the Southern Marl Lowlands in the South Western tip of the county. There are important Market Garden areas in the county—at Melbourne in the South and Chesterfield in the North East. In this latter area there is also a sprinkling of Predominantly Arable (Group 3) and Cropping with Livestock (Groups 6 and 7) farms.

Lindsey.

Lindsey is by far the largest county in the Province. Cropping with Livestock farms (Groups 6 and 7) predominate but they are fairly evenly spread over the whole county. There are a few more Group 6 farms in the North West and Group 7 farms on the Salt Marshes below Skegness. Predominantly Arable farms (Group 4) are clustered mainly in two areas—in the North West and in the South on the Silts and Clays. Very few of these occur on the Lindsey side of

the border with Kesteven where the soil is clay and not fen. Most of the Dairy and Cropping with Dairying farms are on the coastal marshes, especially near Skegness. The same is also true of the Livestock farms, but many of these are found on the wolds in the centre of the county.

Kesteven.

It is in this county that the main concentration of Predominantly Arable farms (Group 4) are to be found. These occur in the Eastern half along the borders of Holland and Lindsey, occupying nearly all the land to the East of the tongue of higher ground running North-South through Lincoln. The only large group of Dairy farms is on the West near Grantham, but there are many Cropping with Dairying farms adjacent to the Nottinghamshire border—the Low Fields of the land use map. Cropping with Livestock farms are also numerous and these are intermingled with the predominantly arable farms in the middle of the county. There are, however, no clear cut lines of demarcation between the main types of farming represented.

Rutland.

Five land use regions were outlined in Rutland by the Land Utilisation Survey. The first of these was called "The Grass Region of the West"—an imposing title for so small an area! Just over one third of the full time farms of Rutland were classified as Livestock farms and it can be seen from Diagram 7 that nearly all the Livestock farms were in the Western half of the county. It is really a continuation of the Leicestershire Livestock area in and around the Welland Valley. In the Eastern half Predominantly Arable and Cropping with Livestock Farms are intermingled one with another. There is a marked absence of Dairy farms, Market Gardens and specialist farms in the county. Many farms produce milk but only a few do so to an extent sufficient to qualify as Dairy farms.

Part-time and Spare-time Holdings.

These two types are of considerable numerical importance in the Province. Together they account for nearly one third of the total number of holdings. Their distribution is shown in Diagrams Nos. 9 and 10 pp. 146-147. It will be seen that they occur in all parts of the Province but there are concentrations at two points on the Lindsey Coast, in West Nottinghamshire and in parts of Derbyshire, especially the East and North West.

Comparison with Types of Farming Map.

Reference was made in Chapter II to the Types of Farming map of England and Wales⁽¹⁾ in which 20 main Types of Farming Areas were listed. Twelve of these 20 type areas are represented in the East Midlands and by counting the dots on the maps reproduced in this chapter it has been possible to make a rough estimate of the number of farms of each type within each type area. These estimates relate to full-time farms only, and are given below as percentages. A measure of the actual number of any type may be derived, if required, by applying these percentages to the raised total of 19,575 full time farms in the Province at June, 1947.

The percentage of farms within each Type of Farming Area is given in Table 99.

PERCENTAGE OF FULL-TIME FARMS WITHIN EACH TYPE OF FARMING AREA
IN THE EAST MIDLANDS.
TABLE 99.

Area	Description	Percentage of farms
A	Predominantly dairying	20
B	Dairying supplemented by other enterprises	1
C	Grazing and dairying	13
F	Mixed farming with substantial dairying side	16
H	General mixed farming	5
J	Farming based largely on wheat and cattle	13
L	Mixed farming based on arable production	2
M	Mainly corn and sheep farming	9
N	Corn and sheep farming supplemented by cash crops	7
O	Mainly cash crops farming	11
X	Land of small agricultural value	1
Y	Marshes	2
Total		100

It will be seen that Market Gardens and Poultry farms are not 'credited' with a type area in the East Midlands. This is natural in view of their small numbers and wide scatter.

Except for the Dairy farms at one extreme and Predominantly Arable farms at the other it is extremely difficult to match Types of Farming as used in the farm classification with the Type of Farming Areas listed in Table 99. The reason for this difficulty is that each Area contains a variety of Types. Tables 100 and 101 illustrate this point but it is worth noting that there is in fact no real conflict between the two sets of figures. The areas linked with dairying—A, B, C, and F do in fact have more Dairy farms than of any other single type. Similarly, the majority of farms in the O type area were classified as Predominantly Arable farms (Groups 4 and 5).

(1) Chapter II. p. 23.

PERCENTAGE OF FARMS OF EACH TYPE WITHIN EACH TYPE OF FARMING AREA.

TABLE 100.

Types of Farming Map	Economic Classification Type of Farm Groups(I)										All groups
	Area group	1	2	3	4	5	6	7	8	9	
A Predominantly dairying	84	2	*	1	1	*	*	8	2	2	100
B Dairying supplemented by other enterprises	63	3	4	—	3	—	1	6	23	—	100
C Grazing and dairying	34	8	—	—	1	8	10	27	3	6	100
F Mixed farming with substantial dairy side	45	16	1	2	1	5	7	12	2	9	100
H General mixed farming	14	17	—	9	3	22	15	18	—	2	100
J Farming based largely on wheat and cattle	9	16	1	13	5	22	17	12	1	4	100
L Mixed farming based on Arable production	19	32	—	8	—	12	5	8	—	16	100
M Mainly corn and sheep farming	7	8	1	16	6	32	12	11	3	4	100
N Corn and sheep farming supplemented by cash crops	*	15	1	31	7	21	14	7	1	3	100
O Mainly cash crop farming	2	7	*	44	20	15	5	3	1	3	100
X Land of small agricultural value	63	—	—	—	—	—	—	37	—	—	100
Y Marshes	15	19	—	13	3	20	12	12	5	1	100
All areas	33	10	1	12	4	13	9	12	2	4	100

* Less than 0.5 per cent.

- (1) 1. Dairying.
 2. Cropping with Dairying.
 3. Cropping with Pigs or Poultry.
 4. Predominantly Arable.
 5. Predominantly Arable with Some Livestock.
6. Cropping with Livestock of Some Importance.
 7. Cropping with Livestock of Considerable Importance.
 8. Livestock.
 9. Poultry.
 10. Market Gardens.

PERCENTAGE DISTRIBUTION OF FARMS OF EACH TYPE BETWEEN TYPE OF FARMING AREAS.

TABLE 101.

Types of Farming Map	Economic Classification Type of Farm Groups(I)										All groups
	Area group	1	2	3	4	5	6	7	8	9	
A	52	3	18	1	5	*	1	13	23	9	20
B	1	*	4	—	—	—	1	—	—	—	1
C	13	10	1	4	4	8	15	28	20	17	13
F	22	24	27	3	4	6	13	17	19	34	16
H	2	8	—	4	3	8	9	7	—	2	5
J	4	21	17	14	15	24	27	14	5	11	13
L	1	6	—	1	—	2	1	—	—	7	2
M	2	7	14	13	11	24	14	9	17	9	9
N	*	10	12	17	10	11	11	4	3	5	7
O	1	7	7	41	47	13	6	3	6	6	11
X	1	4	—	2	1	4	3	2	7	*	2
All areas	100	100	100	100	100	100	100	100	100	100	100

* less than 0.5 per cent

- (1) For descriptions of Groups see footnote (1) Table 100.

It would be better to rename this Types of Farming map a Predominant Type of Farming Map.⁽¹⁾ That is in fact what it is. In most localities, people acquainted with local conditions can agree

(1) See *Map of Predominant Farming Types in Scotland*. Prepared by the Department of Agriculture for Scotland and published for the Land Utilisation Survey of Britain by Geographical Publications Ltd., London.

which type of farming predominates but they are unlikely to agree as to where the border between two types should be drawn. In practice clearly defined lines of demarcation seldom occur without a marked and sudden change in altitude or in other physical conditions. In most areas many types of farming are practised and in some instances it may be very difficult to determine which type, if any, predominates. Unless it is based on a classification of individual farms a Types of Farming Map will remain a set of broad generalisations based on no precise definitions.

Where a complete classification or a sample classification is available it is possible to indicate for each parish or area which Type of Farming is predominant. Difficulties will arise in some areas where two or more types occur side by side and vie with each other for predominance. But there should be no difficulty in depicting this sort of position on a map. See Appendix III.

Note regarding the Farm Management Survey Sample.

Each Department of Agricultural Economics within the Provincial Agricultural Economics Service is required to furnish the Ministry of Agriculture each year with a sample of financial accounts derived from the farms within its Province. Each account is forwarded to the Ministry under a code number so that the identity and location of the farm remains confidential. These accounts are an essential contribution to the data considered at each Annual Review of farm prices and the Ministry is, therefore, anxious to receive a sample which provides the best possible representation of the various aspects of the agricultural industry in England and Wales. For this reason, each Provincial Agricultural Economist is asked to provide specified numbers representative of each of the main groups of farms. The general structure of the sample is agreed between the Ministry and the Conference of Provincial Agricultural Economists of which each Provincial Economist is a member. Because the Farm Management Survey is organised on a national basis, it sometimes happens that a type of farming area of local importance is not significant from a national point of view and therefore, may not be included in the national sample. Other groups may sometimes appear to be over represented. This happens because it was decided that the minimum representation for a Type of Farming Area should be 45 farms.

The national sample requirements were revised during 1950 when the size of the total sample was reduced from 3,100 to roughly 2,500 records and several of the main type of farming groups were redefined.

The factual basis for the allocation of the sample was the Types of Farming Map and the National Farm Survey estimates of the number of farms in each Type of Farming Area. (See Chapter II, p. 26). This was supplemented by the local knowledge and experience of each Provincial Economist.

It is fully appreciated that a local contribution to the national sample may be inadequate for local advisory and research requirements and each Provincial Economist may collect and study additional records relating to groups of particular local importance. In practice, the Provincial Economist may be hard pressed to find staff and resources to undertake such extra tasks.

It is, therefore, of the utmost importance that the contribution to the national sample should give the best possible picture of conditions in the Province and that at the same time it should satisfy local requirements for research and advisory material.

No one would attempt to maintain that the basis for the allocation of the sample was satisfactory but in 1950, when the matter was last decided, no better basis was available.

In the following tables the problem of obtaining a representative sample is examined in the light of the results of this classification.

At present (1954) the East Midlands Province is required to provide 240 financial statements each year consisting of the following :

THE EAST MIDLAND FARM MANAGEMENT SURVEY SAMPLE.
TABLE 102.

District	Type of Farming Area	No. of records
N.W. Derbyshire	A	10
Leicestershire	F	50
E. Nottinghamshire and W. Lincolnshire	J	
Lincolnshire Wolds	N & J	45
Lindsey and Kesteven Limestone	M & N	45
Lincolnshire Warp	O	45
Lindsey Skirt	O	20
Midlands Grazing (mainly Leicestershire and Nottinghamshire)	C	25
		240

No attempt was made to define these districts (although a list of parishes within each Type of Farming Area exists) and in some instances it is largely a matter of chance which type district a particular farm is allocated to. Only seven of the 12 areas in the Province are represented in the sample but these include an estimated 90 per cent of the total number of farms.

Table 103 shows that in terms of the relative numbers of farms of each type the required sample differs greatly from the universe. If it were possible to take farm size into account the discrepancy on an area basis might not be so great. No size of farm requirements were laid down when the national sample basis was decided but Economists were reminded that farms rented at under £50 and under 50 acres in size were much under-represented and also that a comparatively high sampling fraction was desirable for farms rented at more than £750 or more than 500 acres in size.⁽¹⁾

COMPARISON OF SAMPLE REQUIRED WITH THE ESTIMATED NUMBER OF FARMS.

TABLE 103.

Type of Farming	Per cent of total farms		East Midlands
	Universe	Sample	
F, J, M & N	20	4	
O	46	59	
C	11	27	
Other	13	10	
Total	100	100	

That is the position from a Types of Farming Area point of view. It is now proposed to see whether the position appears different from a Types of Farming point of view. Unfortunately it is impossible, except for certain groups, to express the sample required in terms of the Types of Farming distinguished in this report. It will only be possible to compare the actual sample with the estimated universe.

In Table 104 the composition of the sample is given in three ways showing

- (a) the percentage of farms in each type group.
- (b) the present *total* sample.
- (c) the present sample as supplied to the Ministry for national sample purposes.

The picture which emerges is that Dairy Farms are 'under-represented', that cash cropping farms (Groups 4 and 5) are 'over-represented' and that the intermediate groups are not so far from the mark. This agrees with that shown in Table 103.

(1) CAE/82/SC. Unpublished Provincial Agricultural Economists' Conference Minutes.

THE FARM MANAGEMENT SURVEY SAMPLE. A COMPARISON OF THE SAMPLE
AND THE UNIVERSE.

TABLE 104.

Type of Farm	Proportionate to the number of full time farms of each type	Present total sample	Present sample as supplied to the Ministry of Agriculture
	(a) %	(b) %	(c) %
1. Dairy	33	17	13
2. Cropping with dairying	10	10	11
3. Cropping with pigs or poultry	1	4	—
4. Predominantly arable	12	20	25
5. Predominantly arable with some livestock	4	14	17
6. Cropping with livestock of some importance	13	14	11
7. Cropping with livestock of considerable importance	9	12	13
8. Livestock	12	9	10
9. Poultry	2	—	—
10. Market gardens	4	—	—
	100	100	100

The distribution of farms over the Province is shown in Table 105. The total sample does not contain the same proportions of farms from each county as the universe and the position is made much more lopsided when the dairy and mixed farms not required by the Ministry are omitted.

PERCENTAGE OF FARM MANAGEMENT SURVEY SAMPLE WITHIN EACH COUNTY.

TABLE 105.

County	Proportionate to number of full time farms	Present total sample	Present sample as supplied to the Ministry of Agriculture
	(a)	(b)	(c)
Nottinghamshire	16	16	10
Leicestershire	18	8	10
Derbyshire	26	10	3
Linsey	27	52	63
Kesteven	11	14	14
Rutland	2	*	*
	100	100	100

* Less than 0.5 per cent.

Table 106 contains a comparison of the size distribution of farms in the present total sample and in the universe.

The size distribution of the sample is much better than the type distribution but in some groups there are too few small farms and too many large ones. This, of course, is true only on the assumption that the same sampling fraction is appropriate to each size of farm. If it is accepted that a rather larger proportionate sample of large than of small farms is desirable, the size distribution of the present total sample seems reasonably satisfactory.

SIZE DISTRIBUTION OF FARMS IN THE FARM MANAGEMENT SURVEY
SAMPLE AND IN THE UNIVERSE.

TABLE 106.

Per cent

Group		Size of farm—adjusted acres						Total
		0— 4.9	5— 24.9	25— 99.9	100— 299.9	300— 699.9	Over 700	
I. Dairy	S U	—	5 9	46 61	49 29	— 1	— *	100 100
2. Cropping with dairying	S U	—	8 3	52 57	28 38	12 2	— *	100 100
3. Cropping with pigs or Poultry	S U	— 1	36 36	64 45	— 14	— 4	— —	100 100
4. Predominantly arable	S U	—	2 9	39 38	26 36	29 14	4 3	100 100
5. Predominantly arable with livestock	S U	—	— 21	50 37	35 30	9 10	6 3	100 100
6. Cropping with some livestock	S U	—	— 1	24 30	43 49	33 18	— 2	100 100
7. Cropping with livestock of some importance	S U	—	— 4	25 40	43 41	29 14	3 1	100 100
8. Livestock farms	S U	—	— 17	33 43	52 33	10 6	5 1	100 100
9. Poultry	S U	— 50	100 44	— 6	— —	— —	— —	100 100
10. Market gardens	S U	— 23	— 54	— 21	— 2	— *	— —	— 100

* Less than 0.5 per cent.

S Sample.

U Universe.

Objectives of Sampling.

Whether the present Farm Management Survey sample is adequate or satisfactory cannot be answered without a clear definition of the purpose of the sample and without more information about the specific universe which is to be investigated. National and local requirements differ in many important respects but hitherto very little attention has been paid to such differences and to their influence on sampling procedures.

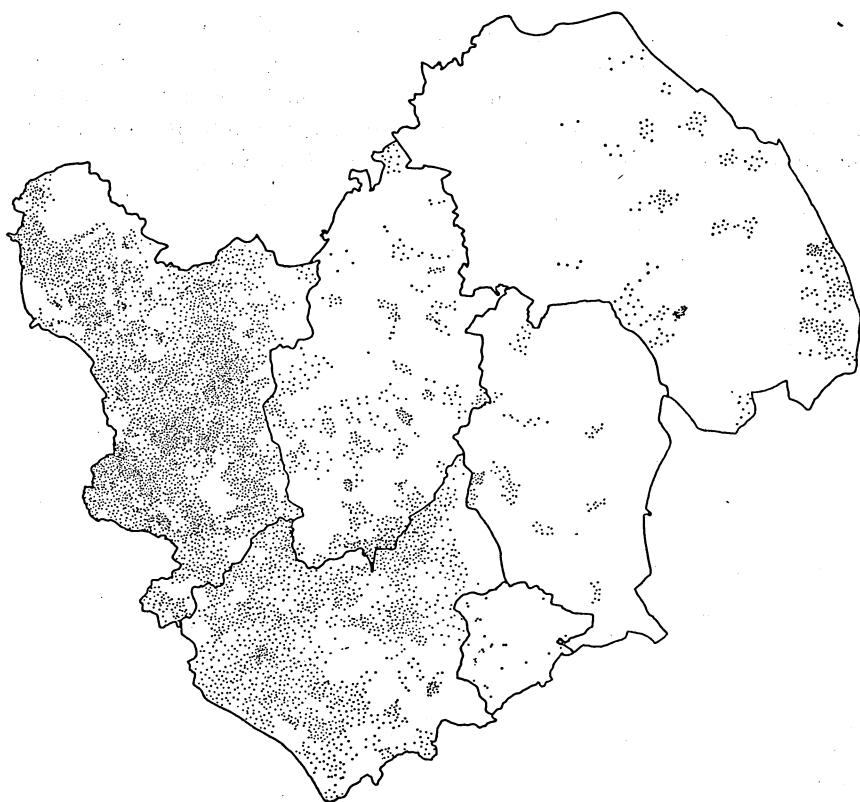
Given a clearly defined objective the most appropriate sampling procedure can only be determined after an examination of certain other factors. The most important of these are:—

1. The size of the particular universe. The larger the universe, the smaller the proportion of it which need be sampled to provide estimates with a given standard error. A Type of Farming classification can yield valuable data about the universe and particularly about the distribution of farms according to type and size.

2. The variance or the range of observations likely to arise. It is evident that if, say the net income, of individual farms of one type varies much more around the group average than those of farms of another type, then to provide an estimate of a given standard of accuracy a larger sample of the former than of the latter will be required. There is, at present no published information about the variance of important items of costs and returns on farms of different sizes and types but an analysis of existing Farm Management Survey data would furnish these results.

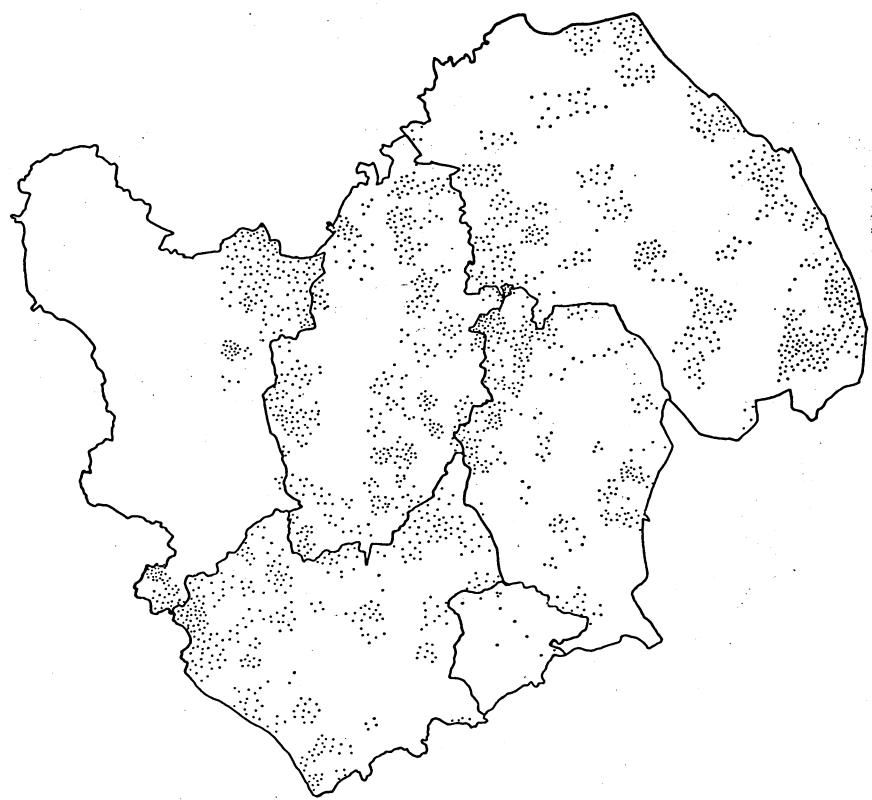
In practice there is an important limitation on the application of satisfactory sampling procedures ; it is that the voluntary co-operation of farmers is required. If a 'selected' farmer cannot be persuaded to co-operate, it is often extremely difficult to find substitutes without upsetting the whole basis of sampling.

DIAGRAM No. 1.



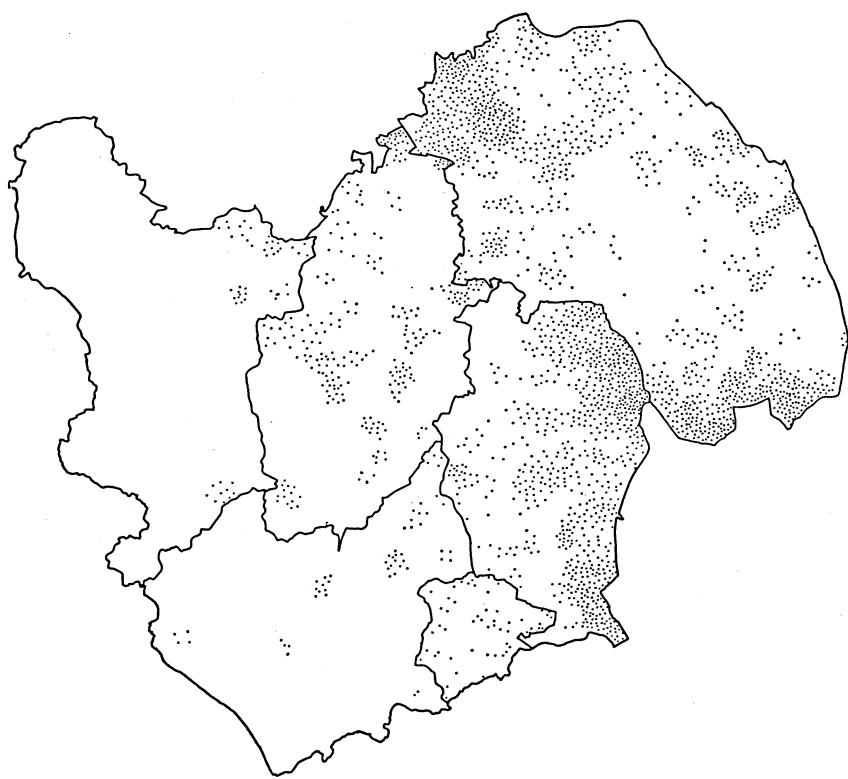
GROUP 1. DAIRY FARMS.

DIAGRAM No. 2.



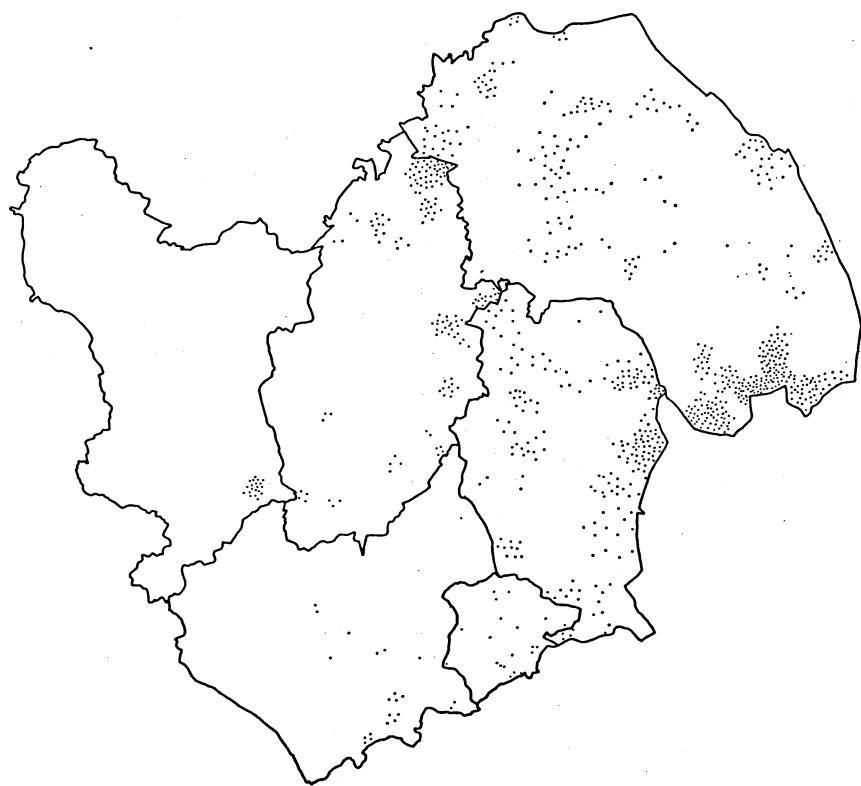
GROUP 2. CROPPING WITH DAIRYING FARMS.

DIAGRAM No. 3.



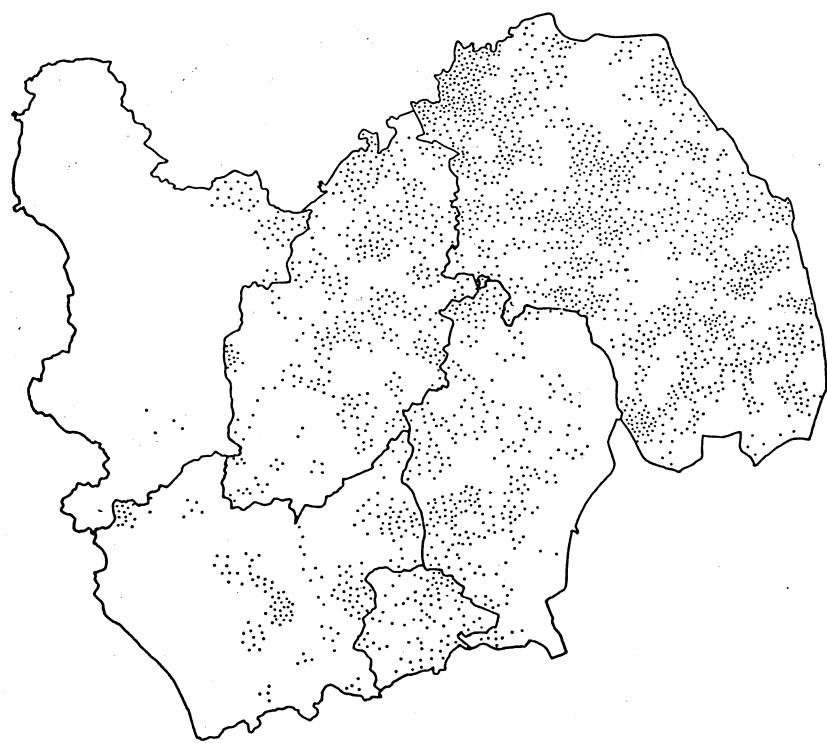
GROUP 4. PREDOMINANTLY ARABLE FARMS.

DIAGRAM No. 4.



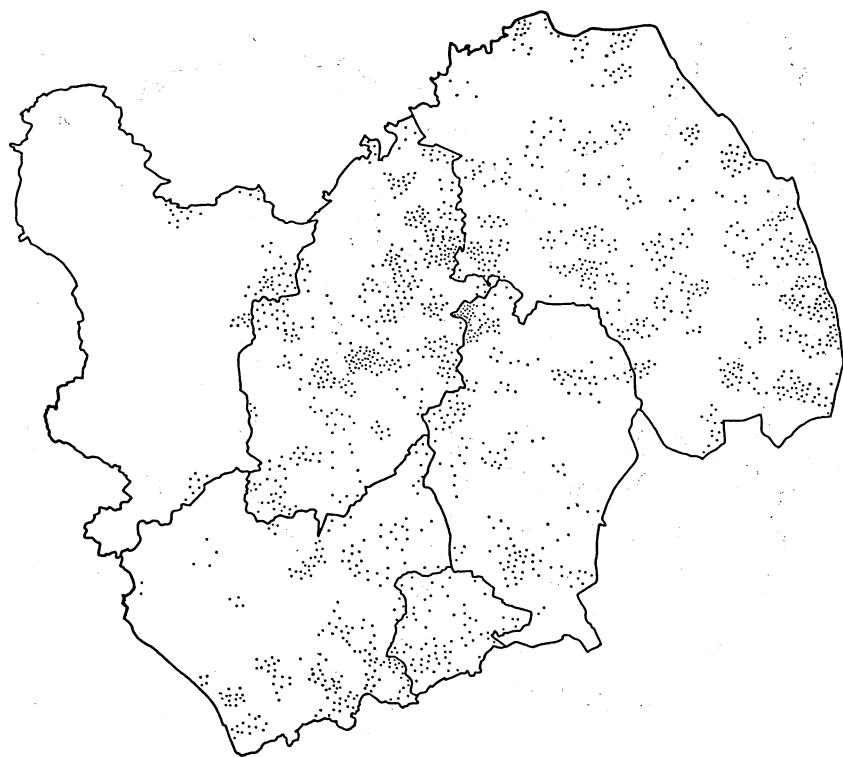
GROUP 5. PREDOMINANTLY ARABLE FARMS
WITH SOME LIVESTOCK.

DIAGRAM No. 5.



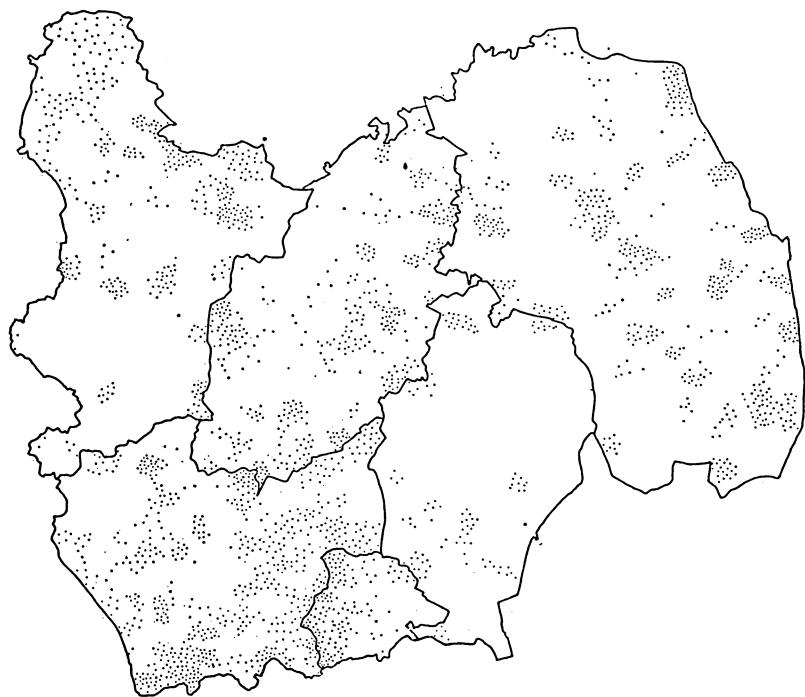
GROUP 6. CROPPING FARMS WITH LIVESTOCK
OF SOME IMPORTANCE.

DIAGRAM No. 6.



GROUP 7. CROPPING FARMS WITH LIVESTOCK
OF CONSIDERABLE IMPORTANCE.

DIAGRAM No. 7.



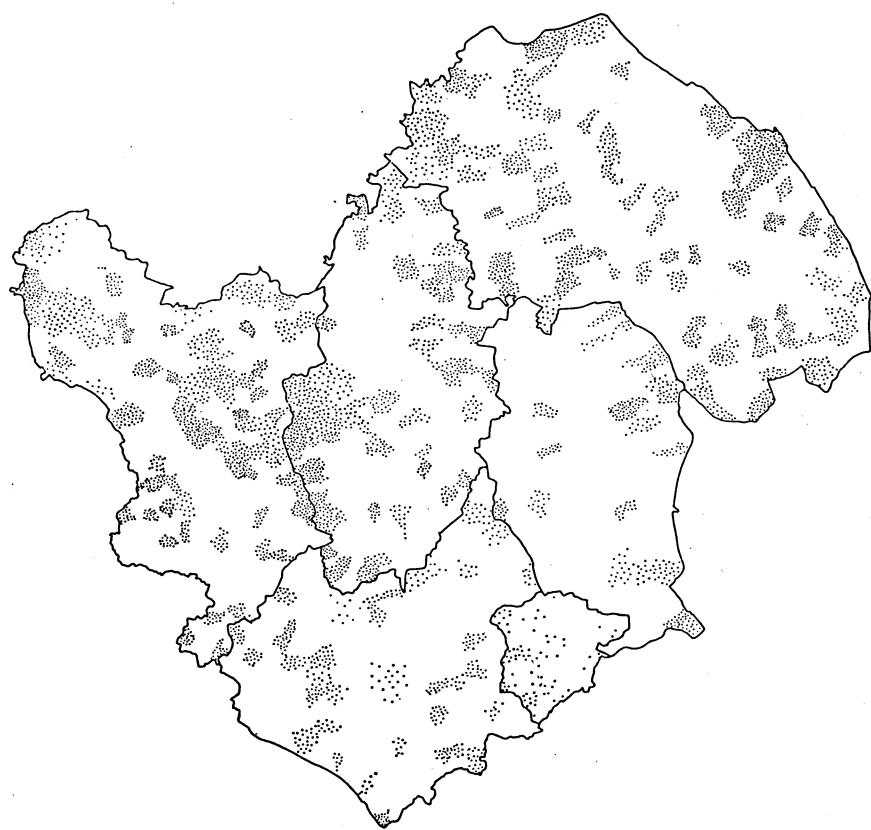
GROUP 8. LIVESTOCK FARMS.

DIAGRAM No. 8.



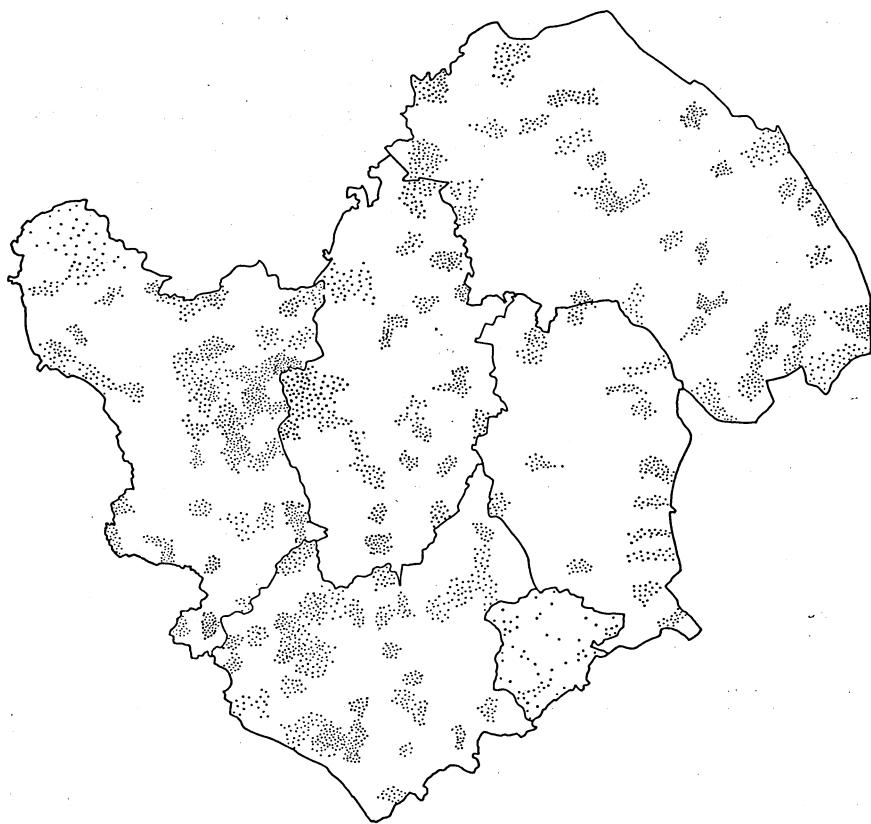
GROUP No. 10. MARKET GARDENS.

DIAGRAM No. 9.



PART-TIME HOLDINGS.

DIAGRAM No. 10.



SPARE-TIME HOLDINGS.

CHAPTER XV.

SOME COMPARISONS WITH THE NATIONAL FARM SURVEY OF 1941.

In this chapter a very brief comparison will be made between some of the Agricultural Statistics for 1941 and 1947 and the results of the National Farm Survey of 1941 and the Farm Classification of 1947. All the figures presented relate to the East Midlands.

Table 107 compares the Agricultural Statistics of the number of holdings in the Province at these two dates. For both years, the number of holdings of under five acres is shown separately. This is because the National Farm Survey of 1941 ignored holdings of under five acres, but the Farm Classification of 1947 refers to all holdings. Another complication is that holdings consisting wholly of rough grazings were not enumerated in 1941.

NUMBERS OF HOLDINGS : EAST MIDLANDS EXCEEDING ONE ACRE.

TABLE 107.

County	1941	1947		Total	Holdings of under five acres crops and grass		1941	1947
	Crops & Grass holdings*	Crops & Grass holdings*	Holdings consisting of rough grazing only					
Nottingham	5,368	5,208	123	5,331	1,169	1,144	1,424	
Leicester	5,356	5,306	44	5,350	704	775	813	
Derby	8,626	8,155	213	8,368	1,700	1,406	1,736	
Lindsey	9,801	9,235	112	9,347	2,054	1,794	2,213	
Kesteven	3,440	3,180	46	3,226	583	489	635	
Rutland	659	618	1	619	75	76	69	
Total	33,250	31,702	539	32,241	6,285	5,684	6,890	

* Excludes holdings consisting only of Rough Grazing. These were not enumerated in 1941.

It will be seen that there were substantial changes in the number of holdings and that these changes occurred mainly, but not wholly, in the under five acres group. Many of these changes could be better described as fluctuations. By 1952, for instance, the number of holdings of under five acres in Derbyshire had risen again to 1,736. It is probable that these fluctuations are due in fact to failure on the part of farmers and crop reporters to ensure that all detached fields are returned on the same schedule as the parent holding. The number of full-time farms is likely to change only very slowly, and it is improbable that the number of separate part-time and spare-time farm businesses varies to the extent implied by the annual statistics.

There were also some changes in the recorded acreage of crops and grass. The National Farm Survey found that in 1941 the acreage of crops and grass on holdings of over five acres in the East Midlands was 2,601,000. In 1947, the corresponding figure was 2,531,000 acres.

Although such changes make close comparison between the National Farm Survey and the Farm Classification more difficult, it will be seen from the following pages that the same broad picture emerges from both studies.

NUMBER OF HOLDINGS(I) OF EACH TYPE AS SHOWN BY THE NATIONAL FARM SURVEY 1941 AND THE FARM CLASSIFICATION 1947—EAST MIDLANDS.

TABLE 108.

Type of holding	No. of holdings		Percentage of holdings		Percentage of crops and grass	
	National Farm Survey	Farm Classification	National Farm Survey	Farm Classification	National Farm Survey	Farm Classification
Full-time	18,196	19,213	72	74	87	95
Part-time	3,298	3,902	13	15	6	2
Spare-time	2,460	1,248	10	5	2	1
Other	1,468	1,525	5	6	5	2
Total	25,422	25,888	100	100	100	100

(1) Exceeding five acres.

The main differences are the lower number of spare-time holdings and the higher number of full-time holdings shown by the Farm Classification and the higher proportion of crops and grass attached to full-time holdings.

It should be borne in mind that for the purposes of the 1947 Classification, holdings were grouped as full-time, part-time or spare-time on the basis of the estimated labour requirements of the crops and livestock carried. In the National Farm Survey, the grouping depended on whether or not the occupier followed a supplementary occupation and on the degree of importance of that occupation in contributing to a livelihood.

Average size of holding.

Table 109 compares the average size of full-time, part-time and spare-time holdings as found in each of the two studies. Two striking features emerge from this table, namely, the very close correspondence in the average size of full-time holdings found in the studies even in individual counties and the striking difference in the average size of part-time and spare-time farms as revealed by two

TABLE 109. AVERAGE SIZE OF EACH TYPE(1) OF HOLDING. Acres

County	Full-time		Part-time		Spare-time	
	National Farm Survey	Farm Classification	National Farm Survey	Farm Classification	National Farm Survey	Farm Classification
Nottingham	122	123	52	13	18	10
Leicester	129	123	52	19	23	10
Derby	79	78	38	14	15	8
Lindsey	139	149	44	10	15	7
Kesteven	172	175	89	11	18	13
Rutland	192	193	66	18	100	13
East Midlands	124	126	49	13	17	9

(1) Exceeding five acres.

methods of classification. This can only mean that part-time and spare-time *farmers* are not necessarily occupiers of part-time and spare-time farms.

The total acreage of holdings over five acres in extent in the East Midlands Province dropped by 70,000 acres between 1941 and 1947, but the total number of holdings increased by 466. It is clear that the average size of all holdings must be less in 1947 than in 1941. The figure of 126 acres for "full-time" farms is the final chance result of such varied factors as the inclusion in 1947 of very large units from the "other" group of 1941 which included Hobby holdings, War Agricultural Executive Committee lands, etc.; of more holdings sharing less land and of the transfer to "full-time" from "part-time" of many holdings.

Days of work per holding.

It has already been explained in Chapter III that in the 1947 classification the grouping of a holding was determined on the basis of the number of hours of work available. Holdings with more than 1,800 hours of work were regarded as full-time units, those with between 600 and 1,800 hours as part-time units and those with less than 600 hours as spare-time units. It was estimated that part-time holdings had 1,392 hours of work and spare-time holdings 512 hours. A similar calculation⁽¹⁾, based on group average figures of cropping and stocking as shown in the 1941 survey shows that part-time holdings had 4,308 hours of work and spare-time holdings 1,448 hours.

For the purposes of this report holdings with more than 1,800 hours of work were regarded as full-time and those with between

(1) The data from the National Farm Survey referred to in this chapter have been derived from unpublished county summaries. It is not clear whether the definition of 'other' holdings agrees with that adopted for Table 1, p. 11. of the National Farm Survey report.

1,800 and 2,200 hours were regarded as 'full-time but with some under-employment'. The figure of 2,200 may be regarded as a reasonable measure of the work input of a worker. On this basis, the part-time holdings as defined in the 1941 survey, provided employment for roughly two workers. In fact, on average, one regular 'hired' worker was employed on these holdings, and there were probably some casual workers. (Only regular workers were noted in the survey). In other words, although the occupier was regarded as a part-time farmer, he occupied a full-time farm and employed a regular worker to help with the work of the holding.

In the same way, the spare-time holdings of the 1941 survey, would, on average, have been regarded as part-time holdings in the 1947 classification, since 1,448 hours of work were available on each.

Farms versus Farmers as a basis of classification.

It is clear from the above that part-time and spare-time *farms*, and part-time and spare-time *farmers* are not necessarily synonymous. It would be wrong to attach undue importance to the distinction because it does not appear to have affected significantly the conclusions drawn in the two surveys regarding the number, proportion and average size of full-time farms in the Province.

It is certainly of great interest to know the proportion of occupiers with an occupation⁽¹⁾ outside agriculture. The reaction of such persons to a given change in economic conditions may be very different from that of the average full-time farmer. They may be intelligent people who can bring beneficial ideas to bear on agriculture; ideas derived from their experiences in other occupations. Some may be in a position to bring new capital into their farming business. Others, on the other hand, may regard farming as the supplementary occupation. They may be inefficient in practical matters and wasteful in the use of resources. A few will look upon farming as a hobby and aim at technical perfection, regardless of cost.

It has been shown (Table 109) that the part-time farmer as defined by the National Farm Survey is handling about four times the acreage found on part-time holdings, as defined in the Farm Classification. It is, therefore, probable that he also has about four times as much capital invested and expects to obtain a commensurate

(1) It is possible, of course, for individuals to be solely dependent on agriculture for an occupation and yet dependent on pensions, gifts or subsidies for a livelihood.

return. He will be affected by price and cost changes in the same way as an ordinary farmer, but his reactions may be different from those of the occupier of a truly part-time holding. The nearer the holding approaches the full-time level, the more will the reactions of the occupier to changing economic conditions resemble those of an ordinary farmer.

Another point is that part-time and spare-time farmers as defined in the National Farm Survey should be capable of producing a considerable surplus for sale and of adding to agricultural output i.e. to production for sale to the non-farm section of the community. But the part and spare-time holdings identified by the 1947 Farm Classification will have a much smaller surplus for sale through commercial channels and in many instances the bulk of the production may be consumed on the holding by the occupier and his family.

There is probably scope for studies of both types. It is useful to know how many occupiers have other occupations or sources of livelihood and equally important to know how many holdings have enough land, crops and stock to provide one man with a full-time occupation. Both questions could be answered in a suitably designed survey.

Most attempts at farm classification have approached the problem from the direction of the farm and not the farmer. This is true of the work done in Scotland and in the United States where the estimated value of output is frequently used to determine whether a farm is a full-time, part-time or spare-time unit and the proportion of product or income derived from each source is used in defining the type of farming followed. The methods followed in both Scotland and the East Midlands for analysing the 1947 Agricultural Returns were essentially the same. But because data were not available regarding the output of various products, it was necessary to assume that the pattern of land utilisation and livestock carry as shown by the Agricultural Returns gave a good indication of the quantity and type of product coming from each farm. Experience in advisory work and comparison with accounting data has shown that in fact, this is so.

CHAPTER XVI.

DAYS OF WORK PER 100 ACRES AND PER PERSON AVAILABLE.

The estimated labour required per holding and for various enterprises has been used in this study as a means for distinguishing between full-time and other holdings and as a measure of the degree of specialisation in particular lines of production such as poultry and market gardening. In this chapter an attempt is made to compare farms of different types and sizes and to study variations in the estimated amount of work available per 100 acres and per person available. All the calculations on which the following tables are based have been performed using average figures for each size or type group. In order to simplify the work of computation, the standards of labour requirements described in Chapter III have been converted to 'man-days' by dividing by eight and rounding some of the resulting fractions. Another important adjustment (for the purposes of these calculations, but not for the determination of the full-time status of a holding) is that in all groups, except Dairy and Cropping with Dairying, the assumed labour requirement of cows and heifers in milk and in calf has been reduced from 25 to 5½ days. It is believed that this gives a closer approximation to the true position on farms where the main objective is the breeding and rearing of stock and not milk production.

The estimates in Table 110 of the total amount of work available per 100 acres are some indication of the intensity of production on each size and type of farm. It does not follow, of course, that an enterprise demanding an input of much labour yields a product

ESTIMATED LABOUR REQUIREMENTS OF CROPS AND STOCK ON FARMS OF EACH SIZE AND TYPE PER 100 ACRES OF CROPS AND GRASS.

TABLE 110.

Man days

Type of farm	Size of farm—adjusted acres						East Midlands
	1— 4.9	5— 24.9	25— 99.9	100— 299.9	300— 699.9	700 & over	
1. Dairy	—	1,972	1,202	1,045	968	—	1,101
2. Cropping with dairying	—	1,704	1,420	1,274	1,286	—	1,326
3A. Cropping with pigs	—	3,151	2,228	1,551	1,789	—	1,873
3B. Cropping with poultry	13,640	2,097	2,412	1,822	1,851	—	2,099
4. Predominantly arable	—	2,241	1,477	1,318	1,301	1,293	1,330
5. Predominantly arable with some livestock	—	2,025	1,615	1,245	1,193	1,261	1,310
6. Cropping with livestock of some importance	—	1,492	1,016	899	884	893	906
7. Cropping with livestock of considerable importance	—	1,527	1,030	961	938	938	964
8. Livestock	—	1,110	916	766	845	699	788
9. Poultry	21,965	6,040	2,092	—	—	—	6,981
10. Market gardens	3,965	2,768	2,734	2,418	2,605	—	2,719

of corresponding value but there is a tendency for crops with a high labour requirement per acre to have a high value per acre.

The estimated number of farms in each type and size group should be borne in mind when considering some of the individual figures in Table 110, but the general pattern which emerges is fairly clear. As farm size increases the intensity of production per 100 acres, as measured by the amount of work which is required to be done, declines. This is true for the first three size groups but in the three largest size groups, the level of intensity is almost constant. Because of wide differences in the proportion of farms of each type of each size, comparison between farming types are best made only within size groups. Market Gardens, Poultry, Cropping with Pigs or Poultry, and Predominantly Arable farms are more intensively farmed than other types. The least intensive were the Livestock farms. Except where there is specialisation in pig or poultry production (i.e. where the available land is seldom expected to provide all the feed required) the presence of livestock generally leads to a decrease in the intensity of production. Group 7 with a higher carry of livestock than Group 6 appears to maintain a higher intensity of production. The reason for this is that farms with Livestock of Considerable Importance (Group 7) were smaller, on average and within each size group, than farms with Livestock of Some Importance (Group 6).

PERSONS AVAILABLE ON FARMS OF EACH TYPE AND SIZE.

TABLE III.

Per 100 acres

Type of farm	Size of farm—adjusted acres						East Midlands
	1— 4.9	5— 24.9	25— 99.9	100— 299.9	300— 699.9	700 & over	
1. Dairy	—	7.7	4.4	3.0	2.9	—	3.6
2. Cropping with dairying	—	8.0	4.5	3.6	2.9	—	3.8
3A. Cropping with pigs	—	18.8	23.4	10.1	2.9	—	10.4
3B. Cropping with poultry	80.0	6.5	5.8	7.6	4.8	—	6.1
4. Predominantly arable	—	12.3	6.3	4.4	4.0	4.2	4.5
5. Predominantly arable with some livestock	—	11.6	5.8	4.2	4.1	4.5	4.6
6. Cropping with livestock of some importance	—	11.9	4.5	2.8	2.5	2.7	2.9
7. Cropping with livestock of considerable importance	—	10.3	3.5	3.0	2.6	2.7	3.0
8. Livestock	—	8.8	3.8	2.5	2.2	2.3	2.9
9. Poultry	72.6	16.2	6.6	—	12.1	—	20.8
10. Market gardens	145.8	27.9	23.2	9.8	—	—	24.9

Table 111 summarises figures already given for individual type groups. These, too, should be examined in the light of the number of farms involved. As explained in Chapter V, an allowance has been made for the manual labour contribution of the farmer and his wife. It is assumed that this is equivalent to the work of one full time person per holding. After conversion to a per 100 acre basis,

this was added to the number of 'hired' workers as shown in the Returns. Casuals have been counted as the equivalent of regulars (see Chapter V, p. 61) but no attempt has been made to allow for any variations in work capacity between men and women or between adults and juveniles. In many instances 'hired' workers include paid or unpaid family workers other than the farmer's wife. There is no doubt that the correction made for farmer and wife labour underestimates their contribution to the labour force on farms of under 100 acres and the converse may well be true on larger farms.

There are marked differences between Types of Farming in the labour force available per 100 acres and it will be noticed that these differences correspond very closely to those noted in Table 110. For five Type of Farming groups sufficient figures are available to show the position on farms of 700 acres and over and in every instance the number of persons available per 100 acres was higher than in the preceding size group.

DAYS OF WORK AVAILABLE PER PERSON PER ANNUM.

TABLE 112.

Type of farm	Size of farm—adjusted acres.					East Midlands
	1— 4.9	5— 24.9	25— 99.9	100— 299.9	300— 699.9	
1. Dairy	—	256	273	348	334	306
2. Cropping with dairying	—	313	316	354	443	349
3A. Cropping with pigs	—	168	95	154	617	180
3B. Cropping with poultry	171	323	416	240	386	344
4. Predominantly arable	—	182	234	300	325	296
5. Predominantly arable with some livestock	—	175	278	296	291	285
6. Cropping with livestock of some importance	—	125	226	321	354	312
7. Cropping with livestock of considerable importance	—	148	294	320	361	347
8. Livestock	—	126	241	306	384	321
9. Poultry	303	373	317	—	304	272
10. Market gardens	27	99	118	247	215	336
						109

Using the material in Tables 110 and 111 as a basis the days of work available per person per annum have been estimated. These are shown in Table 112 and the same qualifications apply as for Tables 110 and 111. They reveal considerable differences between farms of various types and sizes. But are these differences real? It is probable that the variations between size groups within each type group are real enough (except perhaps where there are very few farms) but the differences between Type of Farming groups are more open to question. The very low figures for Market Gardens suggest that the standards of labour requirement used are too low and/or fail to reflect instances where two or more crops are produced from the same land in the same year. To a certain extent this may also be true for

Predominantly Arable farms. It is quite possible, on the other hand, for the figures to be *physically* correct but to provide a wrong impression of the economic position. This would be so if the value of production per unit of labour was different. This point may be illustrated by reference to accounting data. Table 112 shows that there were fewer days of work per person on Predominantly Arable farms (Groups 4 and 5) than on Cropping with Livestock farms (Groups 6 and 7). This was also the position found on these two groups in the 1952-53 Farm Management Survey sample. But the financial results showed that net production (sales, adjusted for valuations, less purchase of store stock) per £100 wages (including farmer and wife) was £374 on Predominantly Arable farms and only £354 on Cropping with Livestock farms. These financial results also provide some evidence of the under estimation of labour requirements on Predominantly Arable farms—the actual expenditure on labour in this group in 1952-53 was roughly 30 per cent above the calculated cost.

The value of figures of days of work available per person (or of performance per man) as indicators of efficiency in the use of labour is probably limited. Comparisons should be confined to farms of a particular type and it is desirable that they should be further confined to particular size groups. Much more basic knowledge about the labour requirement of various enterprises is needed for comparisons between type groups.

Another comparison of some interest may be derived from these estimates of labour requirements. Table 113 shows the estimated proportion of the total days of work devoted to livestock and

ESTIMATED PROPORTION OF TOTAL DAYS OF WORK DEVOTED TO LIVESTOCK AND FEED CROPS.

TABLE 113.

Type of farm	Size of farm—adjusted acres					
	1— 4.9	5— 24.9	25— 99.9	100— 299.9	300— 699.9	700 & over
1. Dairy	—	95	92	89	86	—
2. Cropping with dairying	—	82	69	68	66	—
3A. Cropping with pigs	—	94	79	46	43	—
3B. Cropping with poultry	82	93	74	80	63	—
4. Predominantly arable	—	20	24	25	25	25
5. Predominantly arable with some livestock	—	50	36	34	34	32
6. Cropping with livestock of some importance	—	51	50	51	51	54
7. Cropping with livestock of considerable importance	—	45	57	59	57	54
8. Livestock	—	89	88	81	78	77
9. Poultry	100	98	93	8	41	—
10. Market gardens	32	14	12			

feed crops. It is probable that this proportion is roughly similar to the importance of livestock and livestock products as a source of revenue. But because little is known about the variations which occur in the return to a unit of labour applied to different enterprises, more significance can be attached to the differences between size groups than to the difference between type groups⁽¹⁾. It will be seen that in the majority of type groups the proportion of labour devoted to livestock and feed crops is lower on large than on small farms. This is in accordance with what one would expect. The majority of small farms rely on considerable purchases of feeding stuffs and nearly all classes of livestock benefit from the personal attention which the small farmer is better able to provide than the large farmer.

For the Derbyshire sample of Dairy farms, the estimated labour requirements were calculated for each farm. Analysed into size of farm groups they reveal the same type of differences between groups as shown in Table 112. The average for all Dairy farms in Derbyshire is higher than for the Province because of the more intensive level of stocking in Derbyshire and the slightly lower than average employment of labour, including the farmer and his wife, per 100 acres.

DAYS OF WORK PER PERSON ON DAIRY FARMS OF VARIOUS SIZES IN
TABLE 114. DERBYSHIRE.

Size Group	Size of farm—adjusted acres	No. of farms	No. of workers	Total workers and farmers	Days of work per person
2	5—24.9	14	7	21	220
	25—49.9	117	103	220	287
	50—74.9	78	120	198	305
	75—99.9	50	106	156	335
4	100—149.9	140	386	526	374
	150—199.9	73	272	345	395
	200—249.9	27	111	138	476
	250—299.9	12	80	92	408
5	300—699.9	23	209	232	409
All size groups		534	1,394	1,928	343

In the United States of America, it seems usual to consider farms as one man, two man, three man or larger units and much farm management research and advisory work is done with reference to farms subdivided on this basis. There is evidence⁽²⁾ from the work of Professor Davies that when farms are arranged in order of total

(1) See Chapter IV. Tables 21 and 22. Accounting data suggest that these figures tend to exaggerate the importance of livestock and livestock products on arable and cropping farms.

(2) I. G. DAVIES. *Types of Farming in the Eastern Connecticut Highlands*. Storrs Agricultural Experiment Station, Connecticut. Bulletin 191. August, 1933. pp. 20-22.

months of work there is a definite clustering of farms at the 12, 24 and 36 month levels, i.e. the one, two and three man size. It, therefore, seemed to be worthwhile trying to find out whether any such subdivision was possible in this Province.

The figures used as the basis for Table 114 were, therefore, arranged in ascending order and a frequency distribution calculated of the number falling into each division of 50 man days⁽¹⁾. There were no sample farms with less than 250 days of work but it was estimated that of the total of 3,784 Dairy farms in Derbyshire 190 had between 250 and 300 days of work to be done and so on. The results are shown in Diagram 11. It will be seen that the distribution is by no means smooth and there are definite if somewhat irregular fluctuations in the number of farms falling within each division. If the average days of work per person in Derbyshire is taken at 343, as in Table 114 the one, two and three man stages would occur roughly at the points indicated. Except at the two man stage these do not coincide with the peaks of the frequency distribution but there are intermediate peaks at approximately the 1½ man and the 2½ man stage. The conclusion must, therefore, be drawn that Derbyshire Dairy farms cannot readily be subdivided into Groups employing one, two or three man units. At the same time, the distribution does suggest a relationship between the work on a farm and the labour force employed which recognises the fact that a man is in many ways an indivisible unit. If casual labour is freely available or if family workers can obtain part time employment on other holdings or elsewhere then a labour unit is divisible. But if this is not so, then the addition or subtraction of a regular worker on most farms will create a problem of organisation and call for some adjustment of the existing pattern.

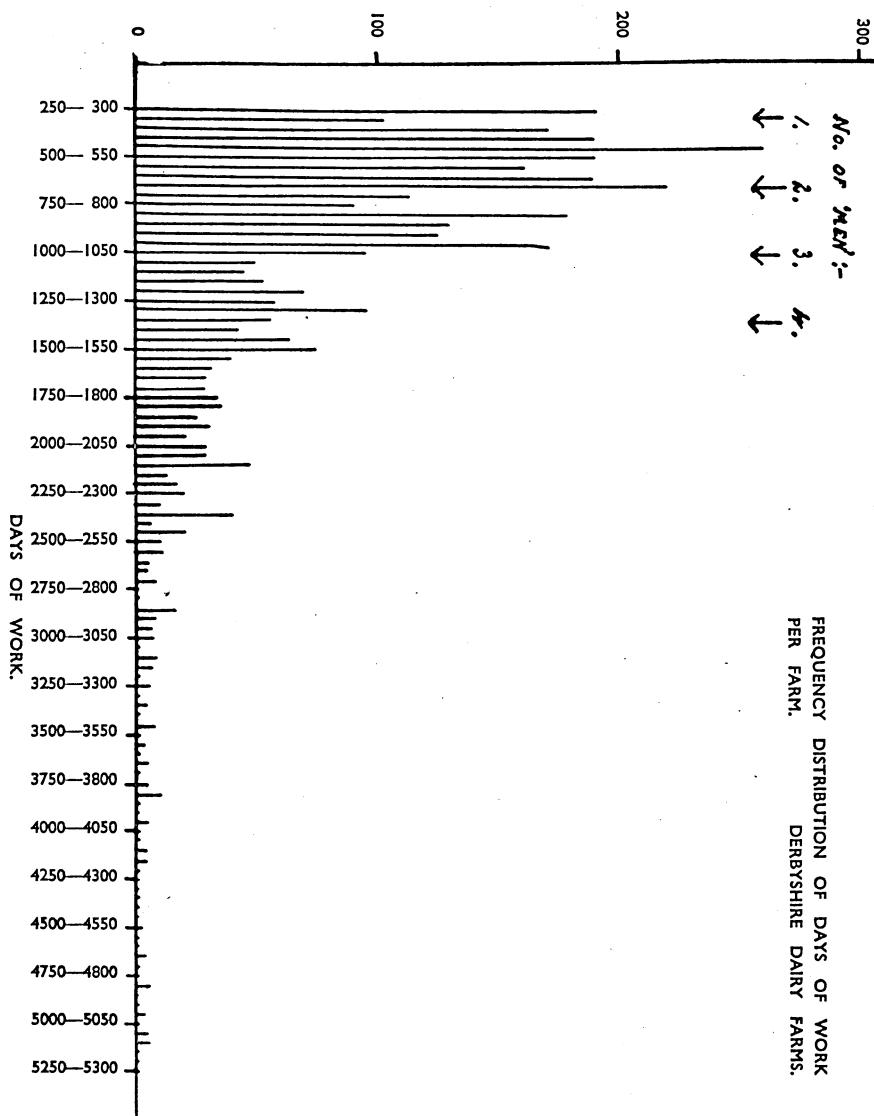
It is to be expected that the position will not be so clearly defined in the East Midlands as in the United States because of the lower work performance per person in this country compared with the U.S.A. and the different labour situation in the two countries. The higher the work performance per man the greater will be the distinction between a one man and a two man farm. It is noticeable also that the pattern of the frequency distribution becomes less consistent after the three to four man point is reached and it may be significant that the proportion of farmers with employment for three or more men is lower in many parts of the United States than in this country. In Derbyshire about one third of all Dairy farms had

(1) It is appreciated that sampling variations may distort a frequency distribution constructed on the basis of sample data. An analysis of *all* Rutland farms of certain types gave similar results.

DIAGRAM NO. II.

CHART A.

NUMBER OF FARMS.



employment for three or more men but in Connecticut the proportion on specialised dairy farms was only about six per cent⁽¹⁾.

Similar calculations were done for the Cropping with Livestock and Livestock groups in Rutland but the frequency distribution showed no marked modes and contained no modes which might be in any way associated with the employment of any particular number of men per farm. It is clear, therefore, that in this country farms cannot be grouped according to whether or not they provide employment for one, one and a half, or two or more men.

(1) I. G. DAVIES. *Types of Farming in the Eastern Connecticut Highlands*. Storrs Agricultural Experiment Station, Connecticut. Bulletin 191. August, 1933. p. 19.

CONCLUSIONS.

CHAPTER XVII.

Historical.

Agricultural Returns for the United Kingdom are available as an unbroken annual series since 1866 and almost from the start the problem of the classification of farms and farmers has been present in the minds of those responsible for the compilation and analysis of the Agricultural Statistics. They soon ceased to be satisfied with issuing the figures for parishes and counties and efforts were made to group the returns in ways which would increase their value. They were tabulated by size of holding in some years and in others by location in 'grazing' or 'corn' counties according to the proportion of arable or grassland in each county. In 1907-1911 a different approach was tried, namely to identify the numbers of occupiers farming for business. The desirability of classifying farms according to the nature of their businesses was given early recognition but this idea was regarded as impracticable because of the absence of clear-cut lines of demarcation. Despite this, an attempt was made in 1924 to tackle this problem by segregating poultry and vegetable holdings and omitting from the main tabulations all holdings under 20 acres in size. Individual farms were grouped according to the proportion of arable and pasture on each.

Thomas and Elms⁽¹⁾ in the 1930's, tackled the problem of amalgamations and detached holdings, and grouped farms as full, part or spare-time on the basis of the economic status of the *occupier*. This was the basis adopted in the National Farm Survey of England and Wales. This Survey carried a step further the work of the Land Utilisation Survey, which had attempted to define Type of Farming Areas, by providing an estimate of the number of full-time holdings in each type of farming area.

The initiative in developing a Type of Farming Classification based on clear definitions and without reference to the occupation of the occupier was taken in Scotland.⁽²⁾ After amalgamating all detached portions with their parent holdings, all holdings were class-

(1) EDGAR THOMAS and C. E. ELMS. *The Farms and Estates of Buckinghamshire*. University of Reading, Agricultural Economics Department, 1938. Survey Study 4, Bulletin 51.

(2) DEPARTMENT OF AGRICULTURE FOR SCOTLAND. *Types of Farming in Scotland*. H.M. Stationery Office, Edinburgh. 1952. (Relates to year 1947).

ified as full-time, part-time or spare-time on the basis of the estimated labour requirements of the crops and stock. Then various farming types, defined far more precisely than in any previous British study, were segregated. It was clearly established that in Scotland at least, Types of Farming as opposed to Type of Farming Areas could be identified and described.

Results of the present study.

The main purposes of this study were listed in the introduction (page 12) as follows :—

- (1) To determine the number of holdings with enough resources of land, crops and stock to provide a man with a full-time occupation In other words, to divide holdings into full-time, part-time and spare-time groups.
- (2) To group full-time holdings according to the type of farming followed and to bring together those holdings with similar problems of organisation and management which may be expected to react in the same way to given changes in economic conditions.
- (3) To study and map the location of different types of farming within the Province.
- (4) To estimate the total resources of land, labour and other productive resources utilised by each type of farming group.
- (5) To suggest ways in which this classification and extensions of it may be used to assist the solution of many problems of a research, advisory and administrative nature.

Objectives (1) to (4) have been discussed at length in Chapters IV to XVI. Some comments concerning (5) are given in the following pages.

The main conclusion of this study is that it is possible to achieve the first four objectives listed above. Farming in the East Midlands is extremely diversified and in many ways very different from that found in Scotland. It was by no means certain that the type of classification undertaken in Scotland could be applied under

East Midlands conditions. It is true that the procedure followed in this study differs in many ways from that used in Scotland, but the underlying hypothesis is substantially the same, namely, that the physical data in an Agricultural Return may be used to determine the type of farming group to which a farm belongs. In other words, it is possible to bring together farms deriving their income from the same general sources, using their land in similar ways and keeping the same types of livestock. In some other countries, notably the United States of America, such a roundabout approach is unnecessary because farmers are required periodically to make a return of the value of the various products of their farms.

It is not to be expected that a farm classification will yield a mass of entirely 'new' information. Many qualitative judgments may be formed on the basis of practical knowledge of local conditions and from studies such as the Farm Management Survey. Anyone well acquainted with the East Midlands, for example, could probably have indicated the relative importance of dairy, mixed and arable farms and pointed out many differences in the organisation of large and small farms. But when full-time holdings have been segregated and placed in appropriate type-groups it is possible to describe the structure of East Midlands farming in quantitative terms. This report contains information about farms of different sizes and about the cropping, stocking and the employment of labour on farms of different sizes which has hitherto been available only in respect of samples of farms which may or may not have been representative.

It is not claimed that the classification described in this report is entirely satisfactory. There are obvious ways in which it could be improved and many of the type groups distinguished require subdivision. But it is the first of its kind in the East Midlands, it is easy to apply and it works in practice. It has been applied to the East Midlands Farm Management Survey Sample and for the great majority of farms, the available financial data have demonstrated that the conclusions drawn from the physical data regarding the main sources of income were valid.

The study of the area distribution of farms of various types has revealed that although certain types of farms are predominant in some areas, farms of different types occur side by side and are often closely intermingled. In many parts of the Province, types of farming are so intermingled that it is only possible to describe them as mixed farming areas, but in other parts, Dairy Farms or Predominantly Arable farms or other types are clearly predominant.

There are marked differences between the structure of the Farm Management Survey sample and that of the Universe it purports to represent. The objectives of the Farm Management Survey should be clearly defined without delay and the best sampling procedure should be determined bearing these objectives in mind and after further study of the results of this classification and of the range to be expected in inputs and outputs on farms of various types and sizes.

Possible Applications.

There are many possible ways in which Farm Classification may be put to practical use. Already in the East Midlands a start has been made in the advisory field. It is possible for an advisory officer visiting a farm to determine the type group to which it belongs and to refer in respect of most farm types, to economic reports showing financial results and comparative standards for a group of similar farms⁽¹⁾. The scope and content, and it is hoped, the value, of these reports are being gradually extended. There is no doubt of the usefulness of this type of information to advisory officers working with individual farmers or groups of farmers.

The value of a classification as an aid to better sampling has already been mentioned. This study, for instance, has revealed a large group of Livestock farms in Derbyshire, specialising in the rearing of dairy herd replacements, which does not appear to have been represented in the Farm Management Survey. Many questions could be posed about this group. How important is it? To what extent do Dairy farms rely on the stores reared on these Livestock farms? What is the system of management—where are the calves or young heifers bought and where are they sold? What is the net income on these farms—can it be improved and if so, how? A detailed analysis of the Agricultural Returns for these farms would answer some of these questions and pave the way for the study of the remainder.

It may be that it is established for a sample of farms that certain changes in management will improve their net incomes. The question then arises 'Can this change be applied to other farms of the same type and, if so, what would be the overall result?' It is often

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- (1) R. B. JONES and W. STUART SENIOR. *Your Farm and Your Profit. How do they compare with the average?* Department of Agricultural Economics, University of Nottingham, Sutton Bonington. 1953. F.R. 119.
W. S. SENIOR. *Farming Types and Profits.* Department of Agricultural Economics, University of Nottingham, Sutton Bonington. 1953. F.R. 122.
R. G. MORTIMER. *Farming Types and Financial Results (East Midlands Farms 1953-54).* Department of Agricultural Economics, University of Nottingham, Sutton Bonington. 1954. F.R. 126.

said that some areas should revert from milk production to store raising and if this were shown to be feasible, then farm classification data would be needed to enable the effect of such a move on the output of milk and the production of store cattle or sheep from the locality to be assessed. It is for local or problem areas that such a line of approach would prove most helpful in any attempt to influence the pattern of organisation and production.

Application to other areas.

Is it possible to apply the system of farm classification described in this report to other areas or to England and Wales ? There should be no difficulty about doing so, but clearly further subdivision of some type groups would be required. Such subdivision would best be done within the various Provinces so that full effect could be given to local variations.

The task of classification would be greatly simplified and the value of the work much enhanced if separate Agricultural Returns for detached portions of land were eliminated. This is something that can only be done by the Ministry of Agriculture who can either impress upon farmers the importance of returning all land farmed as a single business unit on a single Agricultural Return or request their crop reporters to transfer to a single schedule returns completed by individual farmers on separate schedules. If this were done, it would lead to a reduction in the number of part-time, spare-time and 'other' holdings (such as grazings), and add a little to the size of full-time farms.

Where complete farms are under one management—the so-called multiple units—it would probably be better not to amalgamate these on a single schedule, but crop reporters should be asked to endorse each one so that the management unit to which it belongs may be identified. Some of the frequency distributions of labour and of tractors given in earlier chapters provide an indication of the importance of this problem because many farms of over 300 acres are shown as being without tractors or regular workers. It is known that many of these shared a common pool of labour or machinery with other full-time farms. Apart from this, these were completely self contained farms with a regular pattern of land utilisation and livestock carry.

If the problem of detached fields and off-lying holdings could be resolved in this way, the routine work of classification could proceed without difficulty. It would not take skilled machine operators

long to calculate the theoretical labour requirements of the crops and stock on each holding for the purpose of grouping a holding as full-time, part-time or spare-time. A few simple modifications of the schedule (e.g. to provide more sub-totals), could do much to expedite this work. After this, it should not be difficult to devise a routine procedure which would enable ordinary clerical workers to put a farm into the appropriate type group.

It is probable that at this stage (if not sooner) the information could be entered on punch cards for machine analysis and tabulation. Much more comprehensive information could have been derived from the 1947 Returns for the East Midlands if mechanical sorting had been possible. The Ministry of Agriculture already has many frequency distributions of cow numbers, pig numbers, poultry numbers etc., which are of considerable interest and value. They would be of far greater value if they related only to full-time farms of various types.

Apart from the wider scope of the data it would be possible to derive from the Agricultural Returns if they were analysed on a types of farming basis, there could for some purposes be a substantial saving in the cost of obtaining Agricultural Statistics. It is clear that part-time and spare-time holdings, despite their number, use little land and labour and make only a small contribution to the agricultural output of the country. The omission of these holdings might reduce the work of collection and tabulation by about 25 per cent without making an appreciable difference to the value of the statistics obtained.

The Farm Management Survey sample is now "raised" to provide an estimate of the total net income of farmers in the United Kingdom. The raising procedure is based on the number of farms in each of a number of type and rent groups as estimated on the basis of the National Farm Survey.⁽¹⁾ But in this context, Type of Farm refers in fact to Type of Farming Areas. No Type of Farm classification, based on precise definitions applied to individual farms, is yet available for England and Wales. If such a classification were available it might be possible to pinpoint the discrepancy between the Departmental Net Income Calculation and the Raised Sample Net Income. The farm classification data now available in Scotland has been used by Holme⁽²⁾ to improve the weighting of the Scottish

(1) MINISTRY OF AGRICULTURE AND FISHERIES. *Annual Review and Fixing of Farm Prices* 1953. H.M. Stationery Office, London. Cmd. 8798. See also Cmd. Nos. 8239 (1951) and 8556 (1952) relating to earlier Reviews.

(2) DEPARTMENT OF AGRICULTURE FOR SCOTLAND. *Scottish Agricultural Economics*. H.M. Stationery Office, Edinburgh. 1953. Volume IV. p.p. 11 & 41.

Farm Management Survey sample and as a basis for a breakdown of the Agricultural Output of Scotland by Type of Farm.

A farm classification would probably need to be repeated only at intervals of say five years. Little is known about the effect of changes in cropping and stocking on the organisation of groups of farms. Scola⁽¹⁾ has analysed changes in Land Use and Livestock Numbers during 1947-52 on farms of various types but without providing any indication of the number of farms which changed in type during this five year period. It is interesting to note that with minor exceptions all the changes were in the same direction (but not of the same magnitude) on all types of farm. It should be possible to check the rate of change in farm types by examining an identical sample of farms at two dates. It might be necessary to alter some of the demarcation lines slightly (e.g. the percentage of sale crops) but this could be done after study of available Farm Management Survey information.

Finally it is suggested that the Ministry of Agriculture should consider the possibility of a census every ten years of the value of products sold from individual farms in England and Wales. The last Census of Agriculture in the United States, taken in 1950, was the seventeenth of this type. In America, there appears to be no difficulty in getting farmers to provide this information which has been used very extensively both by the United States Department of Agriculture and by numerous research workers. There can be little doubt that such a census would be of equal value in this country for administrative and research purposes.

(1) DEPARTMENT OF AGRICULTURE FOR SCOTLAND. *Scottish Agricultural Economics*. H.M. Stationery Office, Edinburgh. 1953. Volume IV. p. 26.

APPENDIX I.

THE RAISED SAMPLE COMPARED WITH THE AGRICULTURAL RETURNS EAST MIDLANDS JUNE, 1947 AND ALSO THE AGRICULTURAL MACHINERY CENSUS, JANUARY, 1948.

(A) Number of Holdings

County	Agricultural Returns			Raised sample(1)	Difference
	Crops and grass holdings	Holdings with rough grazings only	Total		
Nottingham	5,208	123	5,331	5,317	14
Leicester	5,306	44	5,350	5,346	4
Derby	8,155	213	8,368	8,175	193(a)
Lindsey	9,235	112	9,347	9,324	23
Kesteven	3,180	46	3,226	3,225	1
Rutland	618	1	619	617	2(b)
East Midlands	31,702	539	32,241	32,004	237(a)

(a) Including 164 amalgamations in Derby.

(b) Missing returns. No sample was taken in Rutland.

(B) Numbers of Workers

Type of Worker	Agricultural Returns	Raised sample(1)	Difference (Agricultural returns = 100)
Regular — Male	Nos. 45,015	Nos. 45,370	101
— Female	4,554	4,634	102
Casual — Male	7,826	7,922	101
— Female	4,338	3,959	91
Other(c)	11,901	11,628	98
Total Workers	73,634	73,513	100

(c) Women's Land Army and Prisoners of War.

(C) Crop Acreages

Crop	Agricultural Returns	Raised Sample(1)	Difference (Agricultural returns = 100)
	acres	acres	
Wheat	305,398	305,551	100
Barley	230,908	233,027	101
Oats	172,152	168,856	98
Potatoes	149,976	149,754	100
Sugar Beet	66,561	67,203	101
Flax or Linseed	7,018	7,254	103
Orchards	4,423	5,408	122
Small fruit	733	1,717	234
Vegetables for human consumption	98,488	99,477	101
Crops under glass	131	86	66
Flowers and nursery crops	946	741	78
Cereals for fodder	27,062	28,546	105
Other fodder crops	118,871	117,248	99
Other crops	17,243	15,594	90
Bare fallow	67,400	63,434	94
Temporary grass	302,023	301,837	100
Permanent grass	976,711	968,456	99
Land out of use through flooding	11,736	12,127	103
Total crops and grass	2,557,780	2,546,316	100
Rough grazings	117,531	116,474	99

(1) See footnote (1) on next page.

APPENDIX I.—continued

(D) Livestock Numbers

Class of Livestock	Agricultural Returns	Raised Sample(1)	Difference (Agricultural returns=100)
Cows and heifers in milk	Nos. 183,200	Nos. 185,990	Per cent 102
Cows in calf, but not in milk	46,852	46,696	100
Heifers in calf, with first calf	59,595	59,243	99
Bulls	13,310	13,195	99
Other Cattle :—			
2 years old and over — M	66,404	68,379	103
— F	76,953	74,199	96
1 year old" and under 2 — M	34,484	35,650	103
— F	85,498	84,664	99
Under 1 year " — M	32,605	31,690	97
— F	85,544	85,637	100
Total Cattle and calves	684,445	685,343	100
Sows and gilts in pig	9,907	10,613	107
Other sows kept for breeding	3,913	4,041	103
Boars	1,378	1,347	98
Other pigs	86,663	87,502	101
Total pigs	101,861	103,503	102
Total sheep	547,513	545,028	100
Horses for agricultural purposes	41,107	41,036	100
Fowls over 6 months	1,608,260	1,606,794	100
Other poultry	1,985,750	2,018,790	102
Total poultry	3,594,010	3,625,584	101

(E) Agricultural Machinery

Type of Machinery	Machinery Census	Raised sample	Difference (Machinery Census=100)
	Nos.	Nos.	Per cent
Tillage and Cultivation Sowing and Fertiliser Distributing Equipment :—			
Potato planters	238,364	227,060	95
Seeding transplanters	573	593	103
Other	27,666	26,680	96
Harvesting :—			
Combined harvester—threshers	452	350	77
Green crop cutter—collectors	54	39	72
Green crop loaders	89	78	88
Silage cutters and blowers	69	38	55
Potato chain elevator diggers	313	230	73
Sugar beet loaders	149	257	172
Sugar beet harvesters	30	50	167
Other	86,864	84,372	97
Barn and Farmyard :—			
Hay and straw balers	582	526	90
Grass driers	28	27	96
Grain driers	102	90	88
Other	47,628	47,185	99
Dairy :—			
Milking machines—1 and 2 units	1,517	1,341	88
—3 units	1,403	1,273	98
—over 3 units	711	736	104
Other	15,255	14,983	98
Power and haulage :—			
Tractors —tracklayers over 6 H.P.	1,525	1,074	70
—tracklayers 6 H.P. and under	91	178	196
—3 and 4 wheeled	21,168	20,289	96
—1 and 2 wheeled	1,439	1,321	92
Lorries and vans	7,191	5,800	81
Spraying machinery—fruit	106	123	116
—potato	318	240	75
Other	84,096	82,135	98

(1) During the course of the study these totals were broken down by Type of Farm and Size of Farm. Owing to the high cost of printing these details have not been included in this report but they are available to research workers or others who may be interested on application to the Department of Agricultural Economics, University of Nottingham, St. Michael's House, Sutton Bonington, near Loughborough.

APPENDIX II.

Key between Tables in text and Agricultural Returns, June, 1947.

APPENDIX II.—continued

Item in Text Tables	Agricultural Returns, June, 1947	
	Item Nos.	Description
Casual Workers	41	Casual (Seasonal, part-time, or temporary workers)
	42	Males (except P.O.W.) under 21 years and over
Other workers	43	Women and girls (except W.L.A.)
	39	Members of the Women's Land Army
	40	Prisoners of War
Total labour	44	Total workers.
		Livestock.
Cows and heifers in milk	45	Cows and heifers in milk
Cows in calf, but not in milk	46	Cows in calf, but not in milk
Heifers in calf, with first calf	47	Heifers in calf, with first calf
Bulls	48	Bulls, being used for service
Other Cattle :—	49	Bulls, being reared for service
2 years old and over	50	Other cattle 2 years old and over—male (steers)
" " "	51	Other cattle 2 years old and over—female
1 year old and under 2	52	Other cattle 1 year old and under 2—male (steers)
" " "	53	Other cattle 1 year old and under 2—female
Under 1 year old	54	Other cattle under 1 year old—male (steers)
" " "	55	Other cattle under 1 year old—female
Total Cattle and calves	56	Total cattle and calves
Breeding pigs	57	Sows in pig
	58	Gilts in pig
	59	Other sows kept for breeding
Other pigs	61	Boars being used for service
	62	Young boars being reared for service
	60	Barren sows for fattening
	63	All other pigs—5 months old and over
	64	All other pigs—2 months old but not yet 5 months old
	65	All other pigs—under 2 months old
Total pigs	66	Total pigs
Breeding sheep	67	Sheep 1 year old and over—ewes kept for breeding
	69	Sheep 1 year old and over—rams kept for service
Other sheep	71	Sheep under 1 year old—ram lambs intended for service
	68	Sheep 1 year old and over—two-tooth ewes
	70	Sheep 1 year old and over—other sheep
Total sheep	72	1 year old and over
Horses for agricultural purposes	73	Other sheep and lambs under 1 year old
Fowls over 6 months	74	Total sheep and lambs
Other poultry	81	Horses used for agricultural purposes
	82	Fowls 6 months old and over
	83	Fowls under 6 months old
	84	Ducks of all ages
	85	Geese of all ages
Total poultry	86	Turkeys of all ages
		Total poultry

Item in Text Tables	Item Nos.	Return of Agricultural Machinery January, 1948.
Tracklayers : over 6 H.P. Tracklayers : 6 H.P. and under 3 and 4 wheeled tractors 1 and 2 wheeled tractors	67 68 69 70	Tractors } Tracklayers : over 6 H.P. Tractors } Tracklayers : 6 H.P. and under } 3 and 4 wheeled tractors } 1 and 2 wheeled tractors

APPENDIX III.

PREDOMINANT TYPES OF FARMING

(A Diagrammatic Illustration).

If information were available showing the type group to which each farm in the Province belonged, it would be theoretically possible to locate each farm on a large scale map, and indicate its type by means of an appropriate symbol or coloured dot. But it is evident from the dot diagrams in Chapter XIV, pp. 138-147 that in many areas a complicated jumble of dots or symbols would result. These diagrams suggest that in many localities farms of various types are so intermingled that it is very difficult to judge whether any one type predominates over the remainder. The problem is, therefore, one of endeavouring to convey on a small scale map an impression of which areas show a predominance of particular farming types, and which areas include such a variety of types that none is predominant.

In Scotland⁽¹⁾ each individual farm in the country was type-grouped and a Types of Farming Map prepared which took account, as far as possible, of the actual proportion of individual farms of each type within each parish. This was the first map drawn on this basis. The Types of Farming Maps prepared by the Land Utilisation Survey⁽²⁾ were based on the parish as a unit—the whole parish was shown as grazing, intermediate or arable according to the area of each kind of land. Some parishes were further divided within these three broad categories e.g. into mixed farming with substantial dairying side and mixed farming with substantial rearing or feeding side but such subdivision was done on a qualitative and not on a quantitative basis.

Despite numerous warnings in the accompanying text many uninformed users of Types of Farming Maps may fail to realise that it is necessarily only the predominant types which can be portrayed, and that farms of various types are often intermingled. The appearance of precision which these maps often convey may be one reason for this, but another reason is the frequent omission of the word 'predominant' from the titles of the maps.

(1) DEPARTMENT OF AGRICULTURE FOR SCOTLAND. *Types of Farming in Scotland*. H.M. Stationery Office, Edinburgh, 1952.

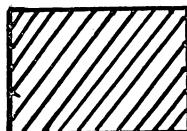
(2) MINISTRY OF AGRICULTURE AND LAND UTILISATION SURVEY OF BRITAIN. *Types of Farming Map of England and Wales, etc.* Geographical Publications Ltd. London. 1941.

The two diagrams included in this Appendix (which relate only to full-time farms) represent an attempt to make it clear that in the East Midlands, at least, there are very few areas indeed where all the farms are of one type. In Diagram 12, the object has been to indicate which single type if any, was predominant. For this purpose, the subdivision of the Predominantly Arable and Cropping with Livestock groups referred to in Chapters VIII and IX has been ignored. Similarly, three specialist groups, namely Cropping with Pigs, Cropping with Poultry and Poultry, have been amalgamated. Before a 'type' appears in Diagram 12, it must have 10 per cent more full-time farms than any other single 'type' within the square in question. In some squares, no type has a lead of 10 per cent, and the square has been left blank to show that the farms within it are very varied in type. The numbers of each type of farm in each square were estimated from the dot diagrams in Chapter XIV, pp. 138-147.

Diagram 13 attempts to give a more detailed picture of the distribution of farming types. Within each square, any type with 15 per cent or more of the total number of farms is shown individually. The blank portion represents the total of the types which had less than 15 per cent of the farms in the square.

Both diagrams convey the same general impressions of East Midlands farming, but Diagram 13 gives a much better idea of just how specialised or mixed farming is in various parts of the Province.

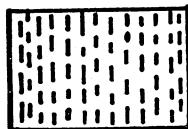
KEY TO MAP DIAGRAMS Nos. 12 and 13.



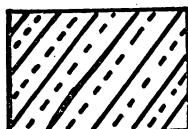
Dairy Farms—Group 1.



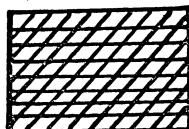
Livestock Farms—Group 8.



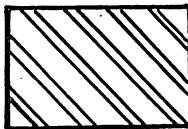
Market Gardens—Group 10.



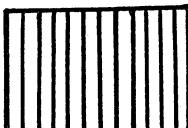
Cropping with Livestock Farms—
Groups 6 and 7.



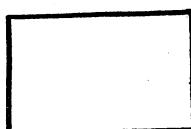
Cropping with Dairying Farms—Group 2.



Predominantly Arable Farms—
Groups 4 and 5.



Cropping Farms with Pigs and/or Poultry,
also Poultry Farms—Groups 3A, 3B
and 9.



In Diagram 12 the blank areas indicate mixed farming where no type has a lead of 10 per cent over other types.
In Diagram 13 the blank areas indicate types which had less than 15 per cent of the farms in the square.

N.B. The symbols employed are the same for both diagrams except in the case of the totally blank portions.

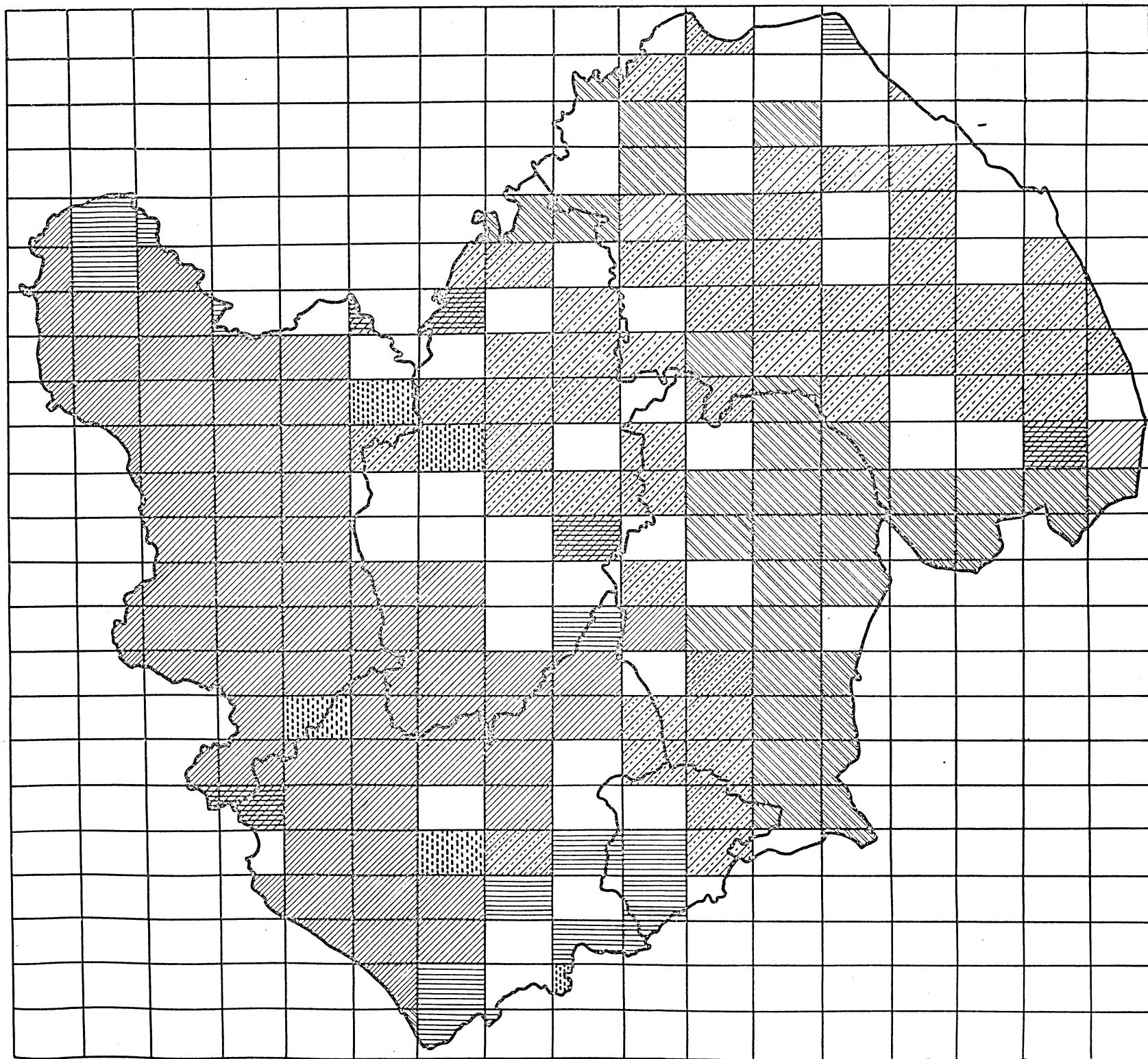


DIAGRAM NO. 12.

PREDOMINANT TYPES OF FARMING
IN EAST MIDLANDS PROVINCE.

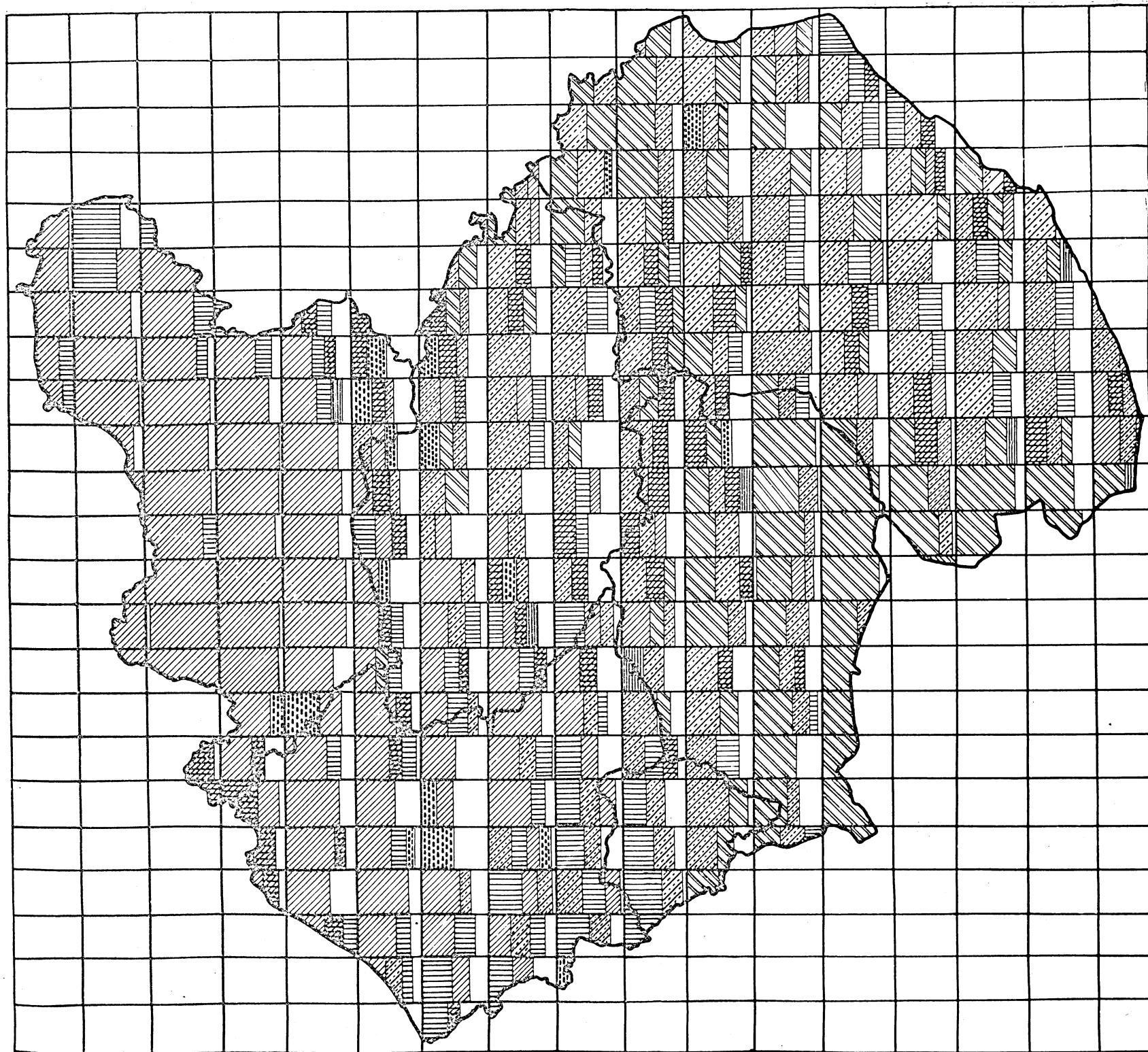
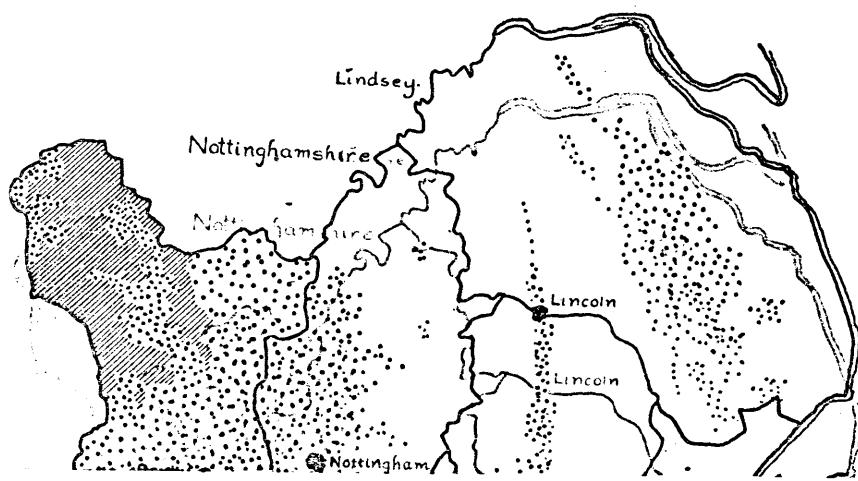
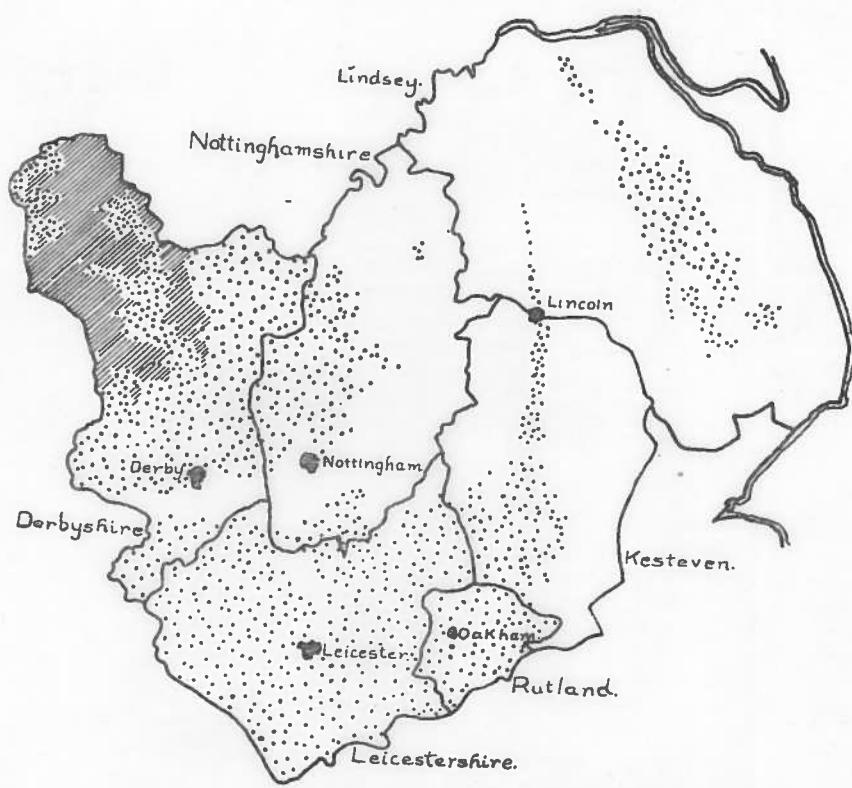


DIAGRAM NO. 13.

DISTRIBUTION OF FARMING TYPES
IN EAST MIDLANDS PROVINCE.

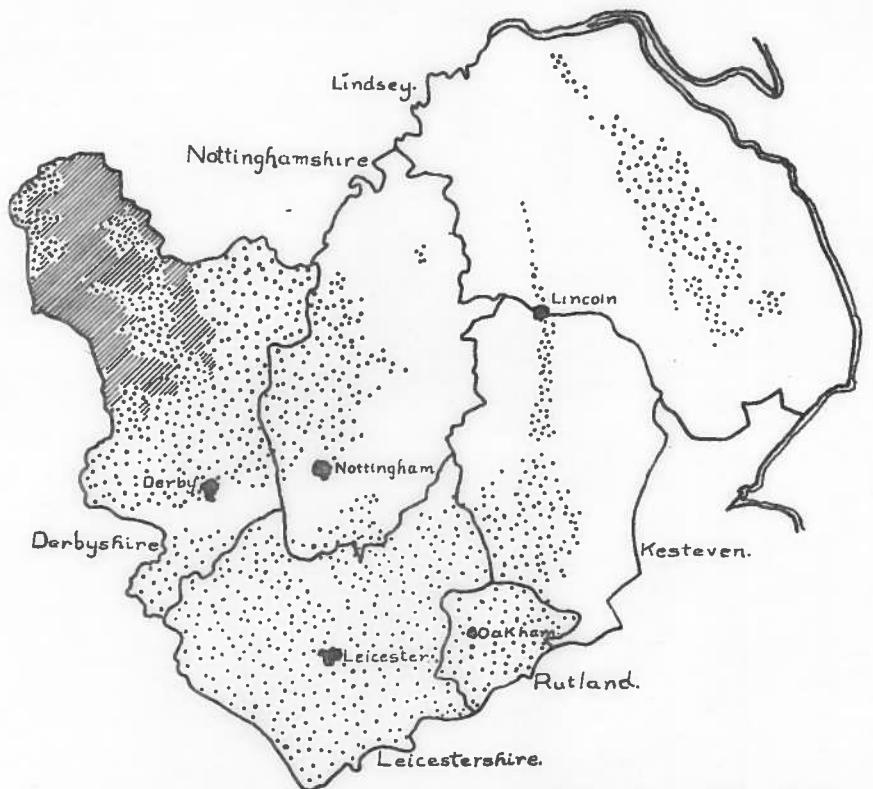


TRANSPARENCY OF PHYSICAL MAP
OF EAST MIDLANDS PROVINCE.



HEIGHT ABOVE SEA LEVEL	
■	800' and over.
■■■	200' - 800'
□	0' - 200'

MAP SHOWING PHYSICAL FEATURES OF
EAST MIDLANDS PROVINCE.



HEIGHT ABOVE SEA LEVEL	
■	800' and over.
■■■	200' - 800'
□	0' - 200'

MAP SHOWING PHYSICAL FEATURES OF
EAST MIDLANDS PROVINCE.

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